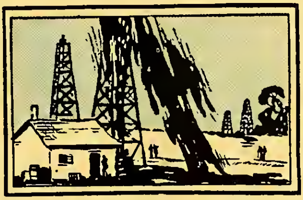
# Louisiana Conservation REVIEW



Mineral Resources of Louisiana

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Perfume Yielding Plants of Louisiana

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The Buffalo Fish

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Progress of Shrimp Investigation

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Role of Universities in Game Conservation

*Published Quarterly by the*
DEPARTMENT OF CONSERVATION

OCTOBER
1932

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VOL. II. NEW ORLEANS, LA., OCTOBER, 1932 NO. 11

## New Geological Bulletin Issued By Department

THE Department of Conservation announces the publication of Geological Bulletin No. 2, entitled "Foraminifera of the Jackson Eocene at Danville Landing on the Ouachita, Catahoula Parish, Louisiana." The volume was prepared for the Bureau of Scientific Research, Minerals Division, by Dr. H. V. Howe, Director of the School of Geology, Louisiana State University and William E. Wallace, also of the School of Geology. It represents nearly a year of research in which slides of over 420,000 individual microscopic fossils were prepared, and is the first detailed study of the micro-fossils characteristic of any of the Louisiana oil-bearing formations.

The Bulletin is the second of a proposed series, the purpose of which is to make available to the public information concerning the geology of Louisiana. The use of micro-fossils for oil well correlation is largely a development of the past ten years. Many publications have been issued in the past few years describing the foraminifera characteristic of important formations in most of the oil producing states. However, these papers contain only scattered references to the foraminifera which occur in Louisiana.

The Jackson Eocene is the most fossiliferous formation outcropping at the surface in Louisiana and is best exposed along the high bluffs on the western side of the Ouachita River in Caldwell and Catahoula Parishes. Much interest has recently been aroused in the Jackson as an oil producing formation and as a key bed in working out oil bearing structures by the discovery of the Conroe field across the Louisiana line in Montgomery County, Texas. It is thought that this Bulletin, which supplies the information necessary to identify the Jackson in well cores and cuttings, will be of great assistance to those who may be interested in locating similar fields in the central part of Louisiana.

The Bulletin is prefaced by a chapter discussing the nomenclature of the various divisions of the Jackson and their correlation. It is illustrated with figures to show the outcrop of the formation in Louisiana and the position of Danville Landing within the formation. The main body of the paper, however, is devoted to the description of 115 species and varieties of foraminifera, forty of which are described as new to science. Fifteen plates are required to present enlarged pictures of these microscopic fossils, most of which are less than one millimeter in diameter.

The third Bulletin in this series will be on the "Geology of Lafayette and St. Martin Parishes" and should be ready for distribution early in 1933.

## Louisiana Conservation Review

Published quarterly by the Department of Conservation in the interest of protection and proper utilization of Louisiana's natural resources.

JAMES P. GUILLOT . . . . . Editor
N. E. SIMONEAUX . . Assoc. Editor

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## Yields of Tung Oil

J. F. MASSEY, writing in the September issue of the Country Gentleman, has the following to say with reference to tung oil:

The answers to the question of how much oil a tung-oil tree will produce and what may be expected in the way to income may now be given with approximate accuracy.

The average yield of tested trees over a ten-year period as reported by the University of Florida Experiment Station was 24.08 pounds of dry shelled nuts per tree. Nuts have been crushed, to find that they yield about 33⅓ per cent oil. On this basis the average yield per tree for the ten years would be eight pounds plus of oil. The average price of oil over the ten-year period from 1922 to 1931, inclusive, was high 15.54 cents and low 14.02 cents. Each tree, therefore, produced approximately $1.20 worth of oil in a year.

A four-year-old tree at the university experiment station grew forty pounds of nuts. From these nuts were taken eight pounds of oil, and at 15 cents a pound the tree earned $1.20. An acre with sixty trees would yield $72.00. Each year it will increase the yield until the tree is fifteen years old.

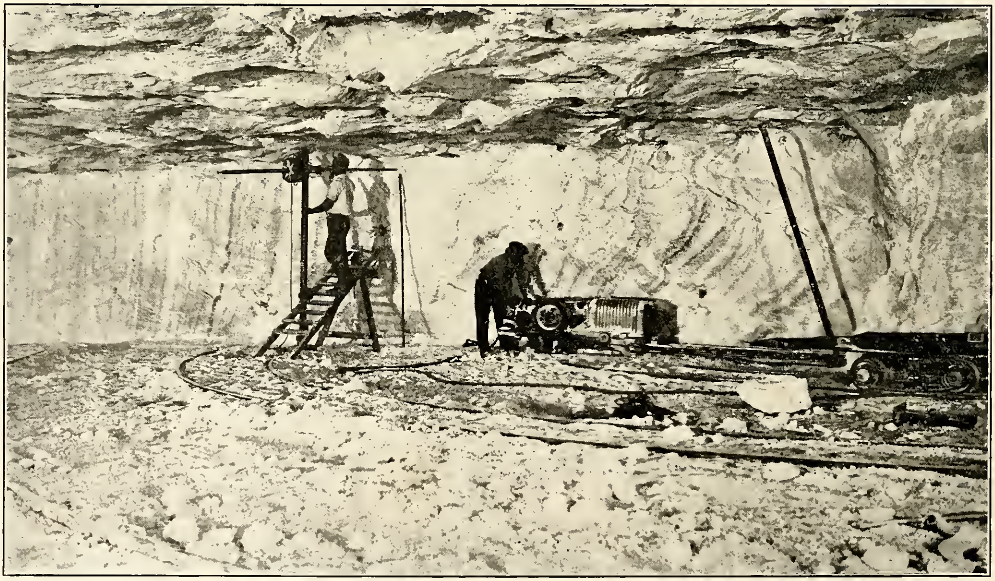
After the trees are big enough to shade the ground they need very little cultivation. A very important factor in keeping down expense is the use of livestock in the groves. They do not harm the trees, but gather the grass and cover crop, and whatever they gain in beef is a profit, whereas it would cost actual money to cut this grass and cover crop so that the nuts can be easily found.

## Game and Forest Fires

GAME resources cannot be successfully increased by mere laws. Game must be raised. To do so successfully the natural cover must be protected from forest fires. Give the wild life of Louisiana the right kind of environment and protect all game during the breeding season, then game will come back in large numbers.

Laws have been enacted to protect game. Laws exist prohibiting forest fires. The public must cooperate by observing the game and forestry laws. Cooperation is the essential factor.

Bayou La Rompe Salt Dome Field, St. Martin Parish, Louisiana



Undercutting and drilling in preparation for blasting, Jefferson Island Salt Mine, Jefferson Island, Louisiana

# *Estimated Mineral Reserves of Louisiana*

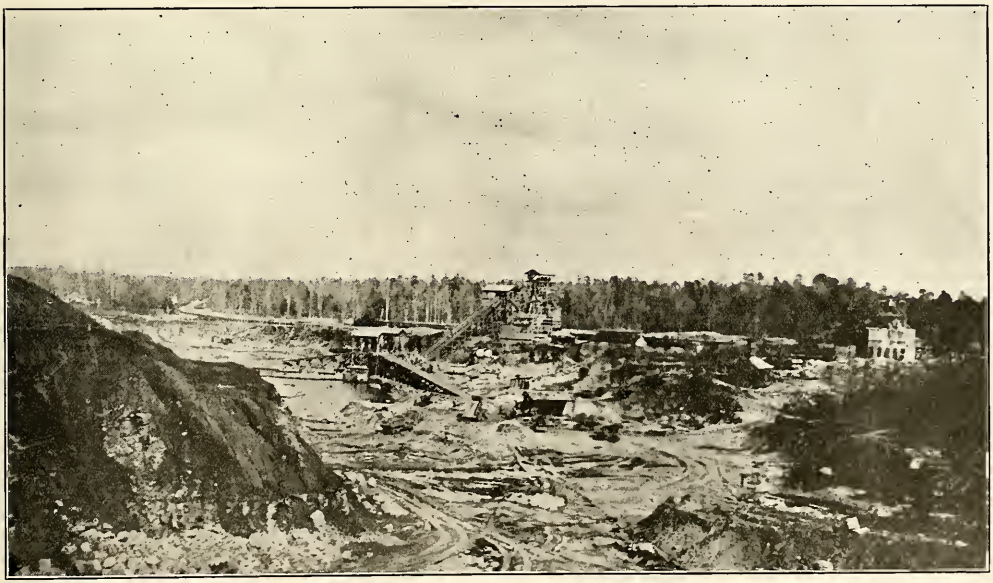
*By* DR. J. A. SHAW
*Director of Minerals*

SETTING up the oil, gas and mineral reserves and arriving at potentials of a State so prolific as the State of Louisiana is by no means an easy task, regardless of the methods used to determine or reason out such an estimate. One can only hope to be fair and conservative in his estimate, and be guided by information compiled by this and surrounding States, for certainly there is but very little if any of this State that can be excluded from potential mineral territory. As is already known, we are producing oil at depths varying from 400 to 7500 feet, with possibilities of production at depths limited only by ingenuity of man and mechanical machinery to drill for same.

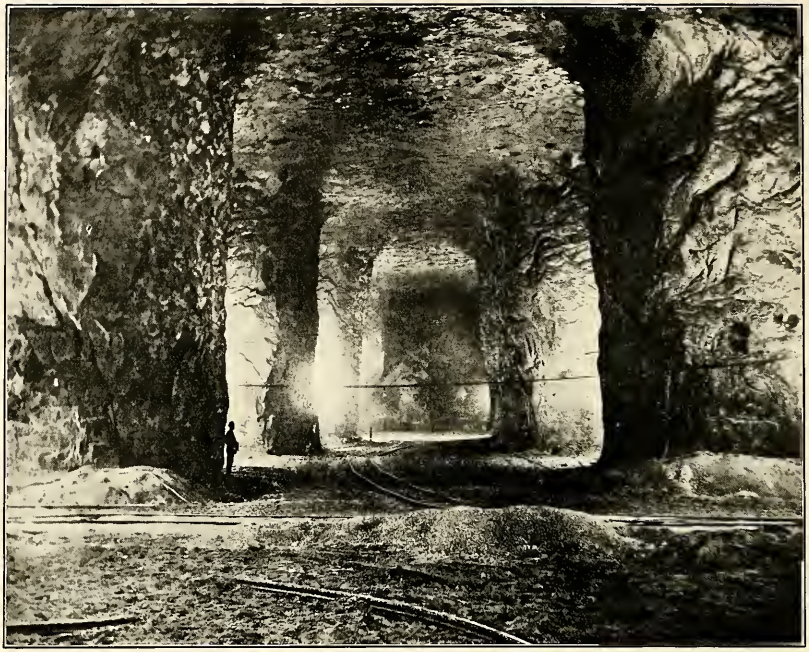
Strange as it may seem to the layman, the sands or producing formations are overlain one by the other at varying depths throughout the State, each having its own peculiar reason why it should produce oil, gas, sulphur, or any other mineral that has been deposited there by Mother Nature during her creation of this Great Universe.

Many estimates of reserves have been made, and many more will be made, but unless by accident no two reports will agree. There will be wide differences of opinion, and yet everyone who undertakes to prepare an estimate has some line of reasoning which cannot be disputed with a great degree of certainty. The reasoning of one may be equally as good as that of another, for unlike the producing field whose limits have been defined by drilling and whose sands have been tested as to thickness and porosity, these facts remain unknown throughout the greater portion of this undeveloped State.

Louisiana is composed of approximately 28,000,000 acres of land and water practically all of which is potential territory for oil and gas. Except for the areas around the known interior salt domes of Louisiana, salt has been found only in the Gulf Coastal country which will be described later. Likewise, sulphur seems to be confined to the Coastal Belt. Lignites are confined almost entirely to the Northwest seventeen Parishes of the State. Limestone is not entirely missing, but does not exist so plentifully as in adjoining states. However, some extensive deposits have been found to exist, especially at Winnfield Quarry in Winn Parish, also in Evangeline Parish. Gypsum is in abundance, though most places carry an



Winnfield Limestone Quarry, Winnfield, Louisiana overburden that precludes possibilities of commercial production except by shaft mining.


Interior view Avery Island Salt Mine near New Iberia, Louisiana

## OIL POTENTIALS

As stated in the beginning of this article, Louisiana's oil potential has merely been scratched and yet she has produced to date approximately three-quarter billion barrels of oil from comparatively few acres and shallow depths. Considering that of all the extensive fields combined, approximately 150,000 acres only have been used to produce three-quarter billion barrels of oil, it therefore seems not unfair to place a conservative estimate of at least eight billion barrels yet to be found and recovered from all the various producing horizons in this State. There will, no doubt be much deep drilling within the next few years for such deep drilling as has already been done has been very encouraging. Almost in every case where the Trinity has been reached on structure it has been found productive both of oil and gas, the oil being of high gravity and the natural gas very rich in gasoline. Rodessa, Sugar Creek, Cotton Valley and Pine Island all have production from the Trinity and without doubt this formation will prove productive wherever found, under conditions suitable for accumulations of oil and gas. But little real prospecting has been done the past few years except in Coastal Louisiana's salt domes. Production from the salt dome areas has increased approximately two million barrels annually since 1928, and will no doubt equal or excel the total production of North Louisiana in the near future. This increased production can easily be accounted for because of the many new discoveries made possible through the use of Geophysical exploration. This method has been found to eliminate approximately 95% of the uncertainties existing before that theory was perfected and applied to the oil industry. It is hoped that the State may again resume its Geological Survey work and that much additional and valuable information may be published on Louisiana's oil industry.

## NATURAL GAS

Not until the past few years has natural gas been deemed such an asset to the wheels of progress, for perhaps more gas has been wasted than has been used. But today is a new day in the Gas Industry, and much effort is being made to eliminate waste of natural gas and to conserve it. Many instances are known where gas is being returned to the sands to be held until such time as there is a demand for it. Several years ago this was not thought of and the gas was wasted into the atmosphere. Today every means is being exhausted toward conserving it for it is realized that some day this same gas will be a much sought after product. Many estimates are being prepared on potential gas productive territories in order that this luxury may be had for as long as possible. Every State should have adequate conserva-

(*Continued on page 35*)

# *Forestry as a Permanent Cure for Unemployment - - -*

*By* EDWARD C. M. RICHARDS

*Reprinted by courtesy of "American Forests"*

What the British Forestry Commission Is Doing to Reduce the Number of England's Unemployed.

UNEMPLOYMENT is worldwide. Nearly every country is suffering from it more or less and none more than Great Britain. And everywhere cures are being sought. Some suggest one thing and some another. In all probability many different remedial activities will have to be resorted to. It is interesting to learn, however, that real headway has been made by the foresters of staid, conservative old England.

These men have had to solve the difficult problem of rehabilitating the forests of their country, which before the World War were largely neglected because of England's ability to import forest products with her great merchant marine. During the war, what forests England had were devastated to help win the great struggle. With splendid courage, persistence and foresight, however, these highly trained British specialists have devoted themselves not only to solving the forest problem but to solving it in a way that will help to relieve unemployment.

My first knowledge of what the English foresters are doing to help relieve unemployment in their country came unexpectedly. I had been talking over my proposed trip through the forests of Great Britain with Sir John Stirling-Maxwell, Chairman of the British Forestry Commission, and he directed me to call upon Mr. H. A. Pritchard, the Deputy Commissioner for England, in order to settle the details of my itinerary. It was in Mr. Pritchard's office that the "Forest Workers Holdings" first came to my ears.

Upon inquiry I learned that the "Forest Workers Holdings" plan developed as a natural sequence to the work of the Forestry Commission. The Commission had for its chief task the searching out, investigating, buying up, and the planting of areas of land suitable for State forests in Great Britain. Naturally such large land purchases had to be located in districts more or less remote, where the land could be had at low prices. It may be a surprise to the people of the United States to learn that in the out-of-the-way corners and back country sections of the British Isles there are areas of considerable size which have, so far, proved to be unsuitable to farming or to industrial or residential use, and are, therefore, available for the purposes of the Forestry Commission. Some of these areas are in the form of moors or lands which from time immemorial have never been under cultivation or forest. In other parts of the country there are thousands of acres of land which formerly were in forest but which were cut over during the stress of the war and never replanted. Again, there are large sections of the country which used to be in farm crops but which for one cause or another are not being cultivated today. Taken as a whole, these three classes of land offered the Forestry Commission a considerable field for their operations, and to date an average of 13,000 acres have been planted every year for the past ten years or more—an astonishing achievement for a country as small as Great Britain.

In acquiring and reforesting these areas the foresters of the Commission had to consolidate and group areas in a given section into units which would be of practical size for administration, not only during the period of making the plantations but permanently. This fact influenced the purchasing and had a decided bearing upon the laying out of the planting areas. Also the Commission's foresters found that the lands which were suited to forest use and which could be had for a small initial expenditures of money, were, as a rule, situated far from towns or cities, and often far from main roads or railroads. In other words, the accessibility of the tracts varied according to the prices asked, the most accessible commanding the highest prices. But the Commission has had to make its appropriations of money go just as far as possible, with the result that many of the purchases are of the cheaper lands and often quite inaccessible.

One of the most important factors governing the industry of farming is proximity to markets. This applies not only to the outlet for the produce from the farm but also as a factor influencing the life of the farmer and his family. It is much easier to keep a man and his family living on the land if the nearest town or city is not far away.

This being the case, the natural result was that when the Commission had secured land for its work and had organized it into forest units of suitable size for systematic forest management, it found that there were no inhabitants near to furnish an adequate supply of forest labor. People had gone to the cities, leaving behind them abandoned houses and farms and sometimes whole villages. In this connection, I was reminded vividly of the many farmhouses, farms and even towns in Pennsylvania, New York, several of the New England states and in the cut-over areas of our own southern and western states where exodus from the farms has taken place.

Faced with the problem of labor shortage in these isolated sections, the Commission was forced to take steps to meet it. Labor imported for the busy season was tried but proved not satisfactory. What was needed was a permanent, residential labor force which would be available not only for the planting season but at all times of the year for protection of the planted trees while young, and later on for the woods work of cutting and marketing the timber. This was a clear and unmistakable demand and the "Forest Workers Holdings" movement is the solution as evolved by the foresters of the Forestry Commission. Briefly, the system is as follows:

After sufficient land has been purchased in a given area to form a forest, a study is made by the foresters and a plan is formulated for the establishment of workers holdings on or near the forest. Suitable sites are located and ultimately houses are built and each holding is made ready for occupancy. In the meantime, the head office of the branch of the Commission handling this work has taken steps to locate suitable workers. At this point in the undertaking the personal interview has proved to be indispensable and for each prospective worker a heart to heart talk, in which the worker's wife always must be included, takes place. The Commission wants to know all about the man, his wife and family, their past history, why they want to move into the country, and as far as possible whether or not they can and will fit into the workers' holding plan. The Commission also is especially anxious for each man—and especially each man's wife—to understand fully just what the move on their part will involve both in money return, kind of life, opportunity for schooling for the children, social relationships and proximity to medical attention. And from experience, the Commission has found that perhaps one of the most important items of all is to make clear to the worker's wife just what it will mean to her in the way of isolation and possible loneliness. For not all women who have lived all of their lives in crowded cities or towns can adjust themselves readily to living in a single house miles from the nearest neighbor. If the foresters of the Commission feel that the applying worker and his wife and children will fill the need, they try to place them on a suitable holding. Finally, the worker and the Commission sign a contract covering the entire relationship, the worker moves out to the holding and the enterprise is launched.

A Forest workers "Holding Unit" home for a single family in Thetford Chase Forest, Thetford, England, such as have been built by the British Forestry Commission to put workers back on the land permanently.

In the New Forest—old, open post-oak on the right, and a fine plantation of larch on the left. The plan is eventually to cut off the old oak, replacing the dense stands.

The contract terms under which each worker enters this field of activity are simple and interesting, especially to Americans faced with much the same problem, but on a much larger scale. The essential parts of the agreement are that the Commission rents the holding to the worker at the rate of seventy-five cents a week or forty dollars a year for the house and a small piece of land for a garden. If in addition the worker wants other buildings such as a barn, a pigsty, or a chicken-house, the Commission will erect them for him, charging him six per cent of their actual cost as annual rent. If the worker also wishes more land, the Commission rents it to him, charging him the economic rental for it. Under the terms of the contract, the rents cannot be raised during the life of the agreement, but when a new agreement is made or a new tenant comes in, as a rule, the rent tends to go up on account of the improvements which have been made. Of course, the house and buildings are kept in repair by the Commission.

In addition to renting the house, buildings, and land to the worker, the Commission enters into a two-way-agreement with him as to his working time. If the Commission wishes it, the worker must give 150 days work a year at current wage rates. And the worker, if he so desires, can secure 150 days work from the Commission at the current wages. Neither, however, is compelled by these terms. If the Commission does not have anything for the worker to do, it does not have to hire him unless he demands it. And if the worker wants to put in his time at something other than forestry work, he is free to do so unless the Commission calls him out. This arrangement has proved to be one of the happiest parts of the whole movement. Some of the workers have been able to do so well at some occupations of their own, such as poultry farming or pig raising, that they have not made use of the whole of the Commission's guarantee of time. Other workers have in some instances greatly exceeded 150 days work for the Commission — in fact many have done so well in fitting into the needs of the forest that they have been on practically full time. But the important thing is that the Commission has a residential force of workers available at any time for seasonal work or emergencies such as forest fires, and the worker always has the anchor to windward of half-time work at current wages if he wants to use it. Also the Commission saves the cost of importing gangs of labor, with all the difficulties that go with it, and in addition is in a position to train the residential worker for special tasks needing knowledge of local conditions. The worker secures a livable home, whatever land he wants, and the benefits of outdoor living for himself and his family at very low rent. Lastly, for both the Commission and the worker, the two elements of permanence and security play a large role in making the entire arrangement satisfactory to all concerned.

While it is not easy to secure accurate data on the subject, the average money income of the workers has been about $650 a year. This is made up of $425 received in wages for work for the Commission and $225 from the sale of farm produce. Then, of course, the worker raises a good share of the food for his family. Some statistics as of September 30, 1931, are of interest here. In all 1,041 holdings had been established, 804 in England and Wales and 237 in Scotland. On these holdings 1,044 workers were established who had 3,197 additional persons living with

A typical bit of rural England—an old mill in the section where the British Forestry Commission is establishing the unemployed in homes on the land through the "Forestry Holdings" plan.

them—wives and children. Rents received by the Forestry Commission from the holdings totaled $57,022 a year. There were 738 holdings over three acres in size and 303 under three acres. The livestock on the holdings amounted to 343 horses, 1,379 head of cattle, 315 goats, 3,053 sheep, 1,974 pigs, and 40,719 chickens and ducks. The total estimated value of all the livestock on the holdings came to $136,579.

Now that England has gone off of the gold standard the work of the Forestry Commission has had to be curtailed somewhat and this has reacted against the "Forest Workers Holdings" to some extent. But the work is such a success that even in this dark hour for England the Forest Commission is carrying on and plans to establish from fifty to sixty more holdings this year. It plans to rehabilitate old houses instead of building new ones, but the social and economic values involved in the enterprise are too great for the work to be stopped.

After hearing so much about the "Forest Workers Holdings" in London, I went out into the rural sections to visit the forests and there had the pleasure of seeing these holdings first hand. Traveling by auto with one of the Commission's district foresters I had excellent opportunity of getting the local details from authoritive sources. This additional close-up view of the work elevated my opinion of the enterprise. For instance, I found that when the Commission built a house for a holding it did an excellent piece of work of it, using a simple but substantial design and excellent material—often stone or brick for the walls. Of course, the accessories such as the water supply and sanitary equipment were very simple, but considering that the average cost of establishing a holding in England and Wales came to only $2,750, the Commission had done very well. In one place I was taken through an entire village which had been abandoned when the Lord of the Manor died and the mansion house in which he lived had been allowed to fall into ruins. The Commission had come into the district, bought up the entire country side, pulled down the huge brick mansion, together with some of the poorest of the village houses, and then rebuilt the bulk of the village out of the stone and bricks taken from the dismantled buildings. Then they had brought in an entire population of workers who were to be available for the large areas of surrounding land which were to be planted to forest. Naturally this called for fixing up the church, getting back a store or so, a blacksmith, a carpenter, and a cobbler, so that when I arrived an entire community had been repopulated on a permanent basis. And as the forest plantations covering the surrounding lands grow, work will increase and the possibility of starting a small permanent wood using industry will become of moment. Altogether, the entire enterprise was most heartening and carried with it, to my mind, food for thought here in the United States.

For instance, we have areas of land in many of the states which have been abandoned for taxes. Some 200,000 acres of such lands have been reverting to public control every year in New York State for ten years or more. In Pennsylvania probably 500,000 acres are already on the hands of the county commissioners. In one county alone in Pennsylvania, I discovered an area of 3,500 acres which had been on the hands of the county commissioners for thirty years. These lands belong to the public through default and practically every tract has on it one or more homesites which could be utilized for a forest worker's home along the lines of the British Forest Commission plan. In Great Britain, it has been estimated that five holdings are needed to every 1,000 acres of forest land. In order to be conservative, let us say that in America we can make a beginning with three holdings to every 1,000 acres. This would immediately call for the permanent settling of 600 workers and their families on the abandoned lands of New York State every year or 1,500 permanent settlements on the abandoned lands of Pennsylvania. If such workers averaged five in the families, that would mean that some 3,000 people would find permanent country settlement each year in New York State or 7,500 persons in Pennsylvania.

The necessary legislative enactments authorizing the county commissioners to place reverted lands in county forests, with the assistance of the state forestry departments and possibly a cooperative financing agreement between the county, state and the federal government, similar to that now in successful operation for forest fire protection under the Clark-McNary Law, could easily be worked out. This would be a long stride forward toward permanently putting abandoned lands, already in the hands of the public, to constructive use and unemployed people to constructive labor.

In addition to the problem of tax delinquent or submarginal lands, we have hundreds of thousands of acres of lands unsuited to agriculture from which the timber has been cut. Such lands not infrequently have some potential forest growth left on them, so that with fire protection they can be made to grow into valuable forest. But owing to the impossibility of immediate

(*Continued on page 39*)

# *Facts About Perfume Yielding Plants of Special Significance to Louisiana*

*By* ROBERT GLENK
*Curator, Louisiana State Museum*

THE SECRETION of the natural fragrance exhaled by many fresh flowers is one of the marvelous manifestations of plant life.

This fragrance is due to minute traces of essential oils which exist in the petals of the flowers and is continuously given off under favorable conditions, in infinitesimal quantity.

The specific odor, which consists in most instances of esters and alcohols, is formed in a peculiar manner in the green part of the plant through the agency of chlorophyll.

This chlorophyll assures the fixation of carbon dioxide existing in the atmosphere in the presence of sunlight and upon which the plants live, assists the transpiration by effecting the circulation of liquids which bring and distribute materials necessary to the mineral nutrition of the plant, but it also actively assists condensation of simple chemical bodies into those highly complex substances such as make up the odoriferous compounds of flowers.

The extraction of the different flower odors is accomplished in various ways, either by distillation with steam; extraction with petroleum ether; by fat absorption either cold or warm or in a mechanical way as is the case with orange, lemon, and bergamot fruits.

The nature of the essential oil in the material dealt with determines the special type of process for its extraction from the plant.

The flowers which are of primary importance in the manufacture of natural perfume products of commerce are Lavender, Orange blossoms, Roses, Jasmin, Acacia, Violets, Tuberoses, Carnations, Mignonette, Narcissus, Jonquils, Lily of The Valley, and Ylang Ylang. These flowers have been grown mostly by the thrifty French gardeners and farmers for centuries to produce natural perfume materials.

Experiments have shown that these plants flourish equally well in the South, and with proper care and selection, could be made to yield good perfume products.

The primary requisite of a profitable industry in this line, however, is skilled workers to process the flowers to advantage and to produce high quality products.

In discussing some of the various perfume yielding plants which, theoretically at least are adaptable to conditions in Louisiana, the artificial relationship of similarity of odor is followed, rather than the botanical classification of the plants.

Since early antiquity, the charm and delightful fragrance of the rose has led to its being regarded as the queen of flowers.

Its red color, so we are told, is due to the blood of Venus, drawn by a thorn when pursued by Mars.

Theophrastus tells us that the rose perfume is absorbed by sesame oil, and Pliny, describing the luxury in which the Romans lived, says that their food was either covered with rose petals or sprinkled with rose water.

As was to be expected, a product so much esteemed as rose water, became an article of trade and during the eighth and ninth centuries, Persia was the center of the industry.

In recent years, successful competition in the production of rose products has arisen in France and Germany, and it may be reasoned that further migration of this industry is to be expected. Eventually, the center of production may be the United States.

As the result of scientific experiments, new roses with improved odor were produced and France now manufactures 20,000 ounces of Rose otto annually.

The rose otto is so skillfully adulterated nowadays that very little pure otto is obtainable in commerce. The average price is $20.00 per ounce and two hundred pounds of rose petals are required for its production.

True geranium or rose geranium produces a fragrant essential oil similar to rose. The oils obtained from geranium grown experimentally at Orlando, Florida, are reported as being equal in odor value to foreign oils. Trial plantings are also being made in Southern California with the object of establishing the crop on a commercial basis for oil production.

Palmarosa grass and citronella grass, from which the Turkish geranium oil and citronella oil of commerce are produced, have been successfully grown in Louisiana. There is no likelihood of profitable competition with the orient in the production of these grasses, as the oils are sold on the market at a very low price for the production of geraniol and citronellol and their esters.

The Jasmin flower is employed by the Hindus in their religious rites and is known as Kudda Mulla. In China, the flowers are used for scenting tea.

Jasmin is successfully grown in Louisiana and Jasmin products have been experimentally made at Jacksonville, Florida, by Dr. Moulie.

The Yellow Jasmine, native to this state, has a somewhat similar odor but is not used commercially for perfume.

The fragrance of the Lilac, Chinaberry, Magnolia, and Cyslamen have the same dominating odor constituents as Jasmin, but are not used in making of natural perfume products as the synthetic counterpart of the lilac odor is made cheaply in the laboratory of the chemist from the turpentine oil.

The largest and most magnificent of all the forest tree flowers, the state flower of Louisiana and Mississippi, the Magnolia grandiflora, is interesting from the fact that the peculiar odor of the flower is due to borneol camphor which the petals contain.

The swamp magnolia of the Eastern states, however, bears very fragrant blossoms of the lily rose type.

No commercial use is made of the flowers and the magnolia perfume of the shops are always compounded of other flower oils and chemicals.

The fragrant oil obtained from Orange blossoms received the name of "Neroli" from the fact that the wife of the Prince of Neroli used the essence for scenting gloves.

The orange is native to India but was introduced into Europe six hundred years ago. In France, the tree is cultivated almost exclusively for its flowers, both the sweet and bitter orange being used. The harvest time is May and June.

Four kinds of fragrant products are commercially made, viz.; the flower oil or Neroli oil; petitgrain oil from the leaves and twigs; orange flower absolute and the orange peel oil from the fruit. Orange flower water is also marketed.

No natural products of the orange flowers are produced in the United States on a commercial scale. California is trying out a fine quality of orange peel oil, cold pressed, which finds considerable use as a flavor for orange drinks. Florida is also making oil from culled oranges besides utilizing the juice.

Gardenia or Cape Jessamine, introduced from South Africa, produces an abundance of fragrant flowers in summer in this state; sweet olive, native to China and India, blossoms profusely in early spring, exhaling an intensely diffusive fragrance especially during the night.

No flower products are employed in reproductions of the odors under their respective names by perfumers.

The Tuberose industry is flourishing in Texas and North Carolina and millions of bulbs are grown for planting purposes but no flower products are made.

The Tuberose is native to Brazil and has been introduced into all civilized countries but is cultivated on a large scale only in France for perfumery products.

The synthetic odor note of tuberose is "niobe oil" or methyl benzoate, cheaply made by the chemist.

Jonquil, Hyacinth, and Narcissus are classed with the tuberose type of odor although their fragrance is characteristic and individual. The flowers are largely cultivated for their natural odor products in France. Sweet Violets are highly prized for their delightful fragrance and are abundantly cultivated in Southern France for manufacturing purposes.

Violet perfume is perhaps the most popular of all the floral essences and this fact is largely accounted for by the use of synthetic "Ionone" which faithfully reproduces the violet odor at a very low cost. Only the most expensive violet perfumes contain natural violet products in their make-up.

Mignonette and Wall flower are great favorites and are largely grown for their perfume products which are suggestive of the violet odor.

Santalwood is potentially a very important crop for the production of the essential oil as the native forests in India and Hawaii are nearly depleted of the wood. It has been experimentally planted in Florida without success.

The sweet gum tree yields a fragrant balsam on bruising the bark of the tree. This substance, called liquid storax, had become an article of commerce in the Southern states during the Civil war but is difficult to obtain at present. Storax is largely used in perfumery and in pharmacy and is the source of cinnamic alcohol.

Cedar wood yields a fragrant oil which is generally distilled from the shavings and waste from lead pencil manufacture.

Florida furnishes the best oil of commerce which is used for scenting soap and for incense for ceremonial purposes. The tree is abundant in Louisiana.

(*Continued on page 40*)

# The Buffalo Fish - - -

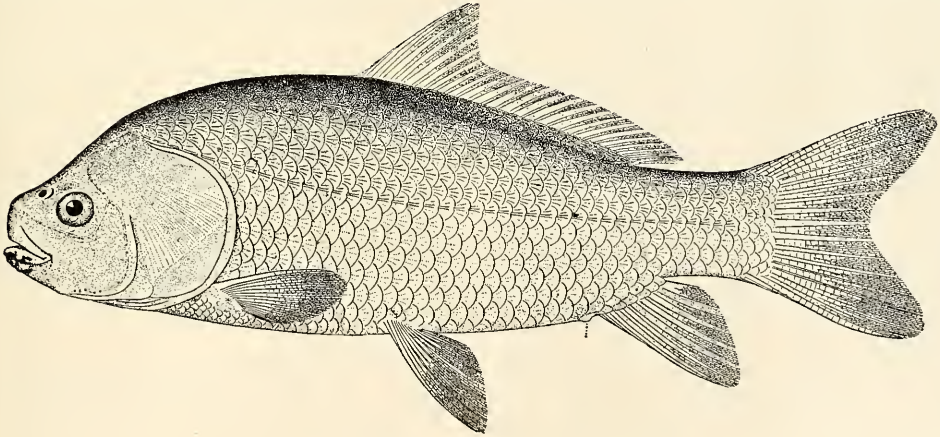
*By* ANNA A. CASTEIX

AMONG the most important, commercially, of the fresh water fishes of the State of Louisiana, as well as the whole Mississippi Valley, is the Buffalo-fish. Its annual take and exportation from this State reaches far in excess of the other fresh water species; the catch for the years 1930-1931 being over twelve million pounds, with a market valuation of over one million, one hundred thousand dollars, for the State of Louisiana.

Several species of the Buffalo-fish are found in the Mississippi River and its tributaries, but these are not designated in the reports of catch. They are, the Common Buffalo-fish, sometimes called the Red-mouthed Buffalo, or the Big-mouthed Buffalo; the Black or Mongrel Buffalo, and the Small-mouthed or White Buffalo. They are all of equal importance, having about the same commercial value.

The Buffalo-fish are large and robust-bodied, and resemble the Carp; the scales are large and coarse, the dorsal fin many-rayed, the meat grainy and bony; they are usually dark in color and inhabit the large rivers and lakes, tributary to the Mississippi River, in the State of Louisiana. They rarely ascend smaller rivers and streams, except for the purpose of spawning. They reach a length of two to two and one half feet and a weight of from seven to thirty-five pounds. They are bottom-feeders—that is, feeding from the bottom of their mouths, and like most fish do not confine their feeding to any depth, but seek levels where food is found, of which they eat a wide variety. They are provided with mouth parts well adapted for gathering food from the muddy river bottoms, feeding on aquatic animal life found in these muddy waters, rubbing their noses against this ooze in search of their food. They also feed upon aquatic vegetation, and upon grains and seeds found in their spawning beds, carried in by overflows. During their spawning season, they feed mainly on buffalo gnats, which they collect from inundated brush and debris.

During their spawning season, which occurs in the months of March and April, usually at the time of heavy rains or during floods when streams are full and marshes inundated, large runs of Buffalo-fish may be seen leaving the deeper waters, to crowd into small streams and ponds, spreading over flooded marshes, for spawning. In these beds they remain only a few days, and soon disappear as suddenly and as mysteriously as they came, but long enough to



COMMON BUFFALO

*Megastomatobus cyprinella* (Cuvier and Valenciennes)

One of our three Louisiana Buffaloes, this species contributes to the very important Buffalo fishery of the Mississippi Valley, which may attain in a single year a total catch of 17,000,000 pounds, with a value of over a million dollars.

The Common Buffalo was first known to science when discovered by two French Zoologists from specimens taken in Lake Pontchartrain. Like the other Buffaloes, it has received very many confusing popular names.

The Buffalo Fish is well equipped to strain out from muddy river bottoms the food which it eats.

A two and a half foot Buffalo may weigh over 50 pounds.

have deposited millions of their eggs. It is during their very short stay in these spawning beds that fishermen trap a great number of these fish. This method of taking Buffalo-fish is strictly against Conservation Laws, and this Department, through its agents, is always on the alert looking for such violations.

During the splashing of the brood fish, the eggs are expelled and fertilized; no nest is prepared and no attention given to the eggs, which adhere to floating grasses, brush and debris in the streams and marshes, and which are left to be hatched by nature in about ten days; the fry coming up immediately to the surface and absorbing the yolk sac in about four days.

To preserve the supply of these valued food fish, the Department of Conservation established, during the year 1930, a Buffalo-fish hatchery at Lake Des Allemands at a cost of $1,500.00. This section, which is a natural breeding ground for Buffalo-fish, had insufficient fresh water necessary for the spawning of the species. Due to this condition, the Department of Conservation erected a syphon on the Mississippi River at Edgard, Louisiana, drawing the fresh water of the Mississippi into Lake Des Allemands. By this process was developed the largest and most ideal Buffalo-fish breeding grounds in the State of Louisiana, which should become of steadily increasing usefulness and of great value to the State.

The Buffalo-fish, being a commercial fresh water fish, is taken by hoop-nets and seines, and under certain restrictions prescribed by the Department of Conservation. According to our conservation laws, all Buffalo-fish must measure eighteen inches or more in length before taken.

Hoop-nets are barrel-like in appearance, ranging from ten to twenty feet in circumference, and are made with a mesh of not less than three inches square or six inches stretched as required by law. These nets are set out in deep channels where the current is swift, each fisherman setting from fifteen to fifty nets, and sometimes more. The fish are kept in these nets in mid-stream until they are ready for marketing, when the nets are taken up by the fishermen, who sell them either through Fish Agents in their section or direct to the Wholesale Fish Dealers; as soon as they are taken from the water these fish are immediately iced to insure perfect condition and delivery.

To seine Buffalo-fish large boats are necessary, as the fisherman must have an ice-box aboard large enough to take care of his catch. The crew is composed of four men, and the size of the seine varies from seven hundred to fifteen hundred feet in length with a depth of twelve feet and a three-inch mesh. The fish are hauled in, put aboard and iced, and taken to the wholesale fish dealers for the market.

Buffalo-fish are sold in two grades: No. 1 and No. 2. No. 1, the White Buffalo, is sold whole, just as it is caught and taken from the water, and must be unscarred and firm and must be in first class appearance in every way upon reaching its destination. This class of fish is sold to the Northern markets and principally consumed by the Jewish trade, which takes about twenty-five per cent of the catch. The large Northern fish dealers send representatives into the State of Louisiana to purchase this No. 1 Buffalo-fish, for which attractive prices are offered. Some Louisiana Wholesale Fish Dealers make a specialty of this No. 1 grade of White Buffalo-fish. The balance of the No. 1 grade is packed in boxes of 100 lbs. each, thoroughly iced and placed on refrigerator cars for shipment to Northern markets also, making the trip in about seventy-two hours from Louisiana to all large markets.

The No. 2 grade of Buffalo-fish consists of Black or Mongrel Buffalo and the Common Buffalo. This grade is dressed for shipment, and sold to all markets from Texas in the west, through the States of Oklahoma, Missouri and Kentucky.

In the shipment of these fish the greatest care is taken in the packing as well as in the icing to insure perfect deliveries, as all shipments must conform to certain State health laws.

The total catch and valuation for the years 1930, 1931 to June, 1932, follows:

1930—5,500,000 lbs., valued at $490,000
1931—6,500,000 lbs., valued at $595,000
1932—2,600,000 lbs., valued at $235,000

## IN MEMORIAM

It is with deep regret that we announce the death on June 20, 1932, of Assistant Farm Forester Grover C. Boswell, of Many, Louisiana.

Mr. Boswell has been with the Division of Forestry for six years. His interest in the forestry work and his conscientious efforts in behalf of conservation will make his loss keenly felt.

# The Lesson of Louisiana - -

*By* JOHN S. GIFFORD,
*Professor of Tropical Forestry, University of Miami*

AT THE mouth of the great Mississippi facing on the Gulf of Mexico is one fertile and progressive state, Louisiana. This is the one state in the South which has made the most of its natural resources.

Located in a bed of mud is the famous city of New Orleans—now second in the United States from a commercial standpoint.

This state is no richer in natural resources and no better located than the state of Florida. From the standpoint of location New Orleans is no better than Miami. In general topography the two States are about the same except that South Florida has the advantage of being many miles farther south and therefore capable of yielding a much greater variety of products and just that much nearer the great business centers of Tropical America. The great difference between the two states is that Louisiana has consistently developed its natural resources. The great difference between New Orleans and Miami is that the Louisiana city has developed an enormous trade with Pan America. In South Florida the railroads and boatlines have failed to do their part in the development of this trade. They have charged all the traffic could possibly bear and have failed to do much in the way of developing imports of raw materials and the establishment of South Florida industries. The literature relating to South Florida in the past has been mostly romantic and poetical, dealing largely with the beauties of the scenery and the comforts of the climate. From the earliest days Florida has been beset with speculators of various kinds and its lands have been divided and subdivided and sold and resold until an abstract of title is worth more than the land.

In Louisiana they have a Conservation Commission and by carefully reading month after month the *Louisiana Conservation Review* it is easy to see why and how they have prospered.

They have many acres of land in Louisiana like our Everglades. They are using this for the propagation of pelt bearing animals such as the muskrat. This land rents for $10 an acre. Louisiana produced more furs than all of Canada and St. Louis in Missouri is now one of the biggest, if not the biggest, fur centers in all the world. At one time Florida sold many otter skins. That beautiful little animal is now scarce. Even the raccoons and alligators are passing. Florida once had a big fur industry. Aside from its oysters and other sea products, Louisiana ships frog legs by the carload.

Louisiana is a great flower and garden state. They produce many things that are good to eat. They are encouraging many industries such as ramie, tung oil and Storax. Our two states are very much alike in possibilities and potentialities although one is a delta and the other a peninsula. They suffer more from the fear of storms and floods than do the people of Florida. The people of Louisiana are all working for the conservative development of the great resources of their state. There are sectional differences and jealousies in Florida. Louisiana, like Florida, has suffered because of bad politics but Louisiana has prospered in spite of it while Florida has not. Up to the present time the spirit of play has pervaded Florida. Nobody but the poorest worker ever takes it seriously. What is done is mostly done for fun. Years back it was considered smart to own an orange grove in Florida whether it paid or not. Most people came here for a rest or for a change. Even the Florida East Coast Extension from Miami to Key West was built for fun. Millions were spent to build a railroad to Key West which is a longer route to Havana than a boat route direct from Miami. We have been regaled with beautiful maps, pictures of millionaires' homes, race courses and golf links but as yet we know very little about the resources or capabilities of South Florida from an agricultural industrial or commercial standpoint. Many men in office have had their jobs so long they have grown musty and privileges and prerogatives have been handed from father to son. Noted families have become so firmly entrenched that offices and emoluments have become hereditary. Let us try to do a lot of little things well rather than botch a lot of big things.

In New Orleans there is a great University named Tulane. They have been working on tropical diseases and other things tropical for many years. They have a big institute of middle American Research and are very busy studying conditions in Pan-America. Let us learn from Louisiana. It is time to do something well without boosting and boasting. With half the state sold for taxes and the remainder more or less mortgaged it is time to start all over again on a more sound basis.

In the classification of land, in fact in the tropics in general, the quality of the soil is not so important as in northern regions. Owing to the great variety of tropical crops, almost all tropical soils, if properly treated, may become fruitful. Other factors such as location are of more importance than fertility. Because of the abundance and quick and constant decomposition of humus in the tropics depleted soils may be quickly rejuvenated. In the coming readjustment of land use in South Florida I believe there should be an active 5-acre home farm development along all main highways. The rest of the land should be properly divided into forest and grazing areas with a large portion of our land in specialized forest crops with the development of a high grade cattle industry in regions best fitted for grazing. In addition to many 5-acre farms we should have many small industries using the products of our land and sea as well as many other materials imported from nearby Pan America. Then there will be hope for a happy future here on a new, better and sounder basis. Unless there is a sane revision of land use and unless taxation is removed from land and unless many small industries are developed, I can see no assurance against want and worry in the future.

What is really worth while in this world? Some things are destructive, some neutral, some constructive. Of the constructive things the development of a 5-acre homesite out of the city on a main highway comes first.

Proper educational work of any kind for our children and ourselves is of course essential. In idle moments and in passing let us note the vegetation that surrounds us coming from the four corners of the earth. We have naturalized plant immigrants from Asia, Africa, Australia, South and Central America. Think of the work of somebody over a period of many years bringing these things from distant parts. We should use these to better advantage. They have completely changed our landscape and our occupations. Let us take note of everything we use and figure out some way of making the same thing here or a suitable substitute.

In time little industries become bigger. By a careful study of conditions in Louisiana we can learn many things. Let us push the Everglades National Park. That will keep a lot of land off the real estate market and will serve as a sanctuary for many valuable plants and animals.

We could import many things from Pan America and convert them here into useful objects. The fine China clay of Central Florida is carried to Trenton for manufacture. Our clams from the West Coast are sent north in bulk to be canned. Mahogany and other tropical woods are sent to Michigan and Kentucky for manufacture into furniture. We even send north for our grub hoe handles. The native of the Keys divests a sapling of its side branches. He sticks the sapling through the eye of his grub hoe. He pushes it down tight, then he waits a few days for the sapling to grow. In that way he puts a handle on his grub hoe. It is the only place I know of where they grow handles on their grub hoes. We even import sapling fences from Europe. Australian pine could be used for this purpose. I have heard it said that the white mud so common on the Keys in the Bay of Florida can be pressed into a good building block without the use of cement. We have no doubt many resources that can be more profitably handled than at present. The state of Florida contains one-third of the world's supply of phosphate and the measure of the fertility of many soils depends upon its phosphorus content. To name all our resources would require much time, but let us follow the example of Louisiana. Make the most of what we have and make the most of what we can import from Pan America.

The passing of the old time Southern planter, of the country gentleman and the gentleman farmer is a great loss to the nation. They were all courteous, hospitable, stalwart and prosperous, picturesque in character and proficient in their profession. We can develop 5-acre home farms along our main highways, the rest of the land going rapidly into the hands of the state should be used for grazing, pelt raising and various forest industries.

## SNAKES DECLINE TO BITE FRIENDLY BABY; WIN HOME

Because they allowed themselves to be fondled instead of biting her two-year old son, Mrs. Lillian Michael Ledbetter of Black Mountain, N. C., is going to keep two large rattlesnakes she found playing with the child.

Returning after a brief absence she found the child seated on the ground with one rattler in his lap and another allowing itself to be fondled by one hand as it lay on the ground beside him.

Her brother John captured both reptiles. One had 15 rattles, the other 18. The man said neither showed any inclination to harm the baby.

# The Role of Universities in Game Conservation - - -

*By* ALDO LEOPOLD

*Sporting Arms and Ammunition Manufacturers' Institute*

THE successful production of game crops depends less on the manipulation of game laws by legislators than on the manipulation of game environments by landowners.

The realization of this fact is rapidly changing the subject matter of game conservation programs. They are becoming less and less a matter of what laws are passed by legislatures, and more and more a matter of how farms and forests are operated by their owners.

With this change in subject matter has come a realignment of functions. The new job of finding out how to modify farming methods in favor of game cannot be directly performed by game departments. It naturally belongs in the agricultural colleges, forest schools, and universities—hereinafter referred to collectively as "universities."

**Research work and practical training courses in game management offer some interesting possibilities**

These institutions already have their hands more than full. Should they volunteer to work out methods of game cropping? Are the landowners asking them to do so? This is a very perplexing question. It may be well to remember, however, that the job of working out improved farming methods was not thrust upon our state institutions by farmer-demand. They grasped it as an opportunity, and later showed the farmers why. Neither, to my kowledge, has been sorry since.

The working equipment necessary for a game research program may be roughly classified as follows:

1. Man power in the biological sciences.
2. Experts in the other land crops, such as forestry, with which the game crop must be dovetailed.
3. Field man power, such as county agents, for extension to and education of landowners.
4. Land for demonstrations.
5. Game experts.
6. Funds.

It is clear that the first four items are found in almost any university, whereas the last two are almost always lacking at the outset. How can they be obtained?

Experience has so far disclosed six sources of funds:

1. Conservation departments. In Michigan, for instance, the department has financed a series of fellowships in fish management.
2. Special legislative appropriations. No examples yet.
3. Industrial fellowships. Many industries with a financial stake in the success of game conservation might establish fellowships similar to those now financed by the Sporting Arms and Ammunition Manufacturers' Institute.
4. Private donors. In Michigan some $25,000 has been underwritten for a demonstration in game and fish management by private donors.
5. Game foundations, such as "More Game Birds in America, Inc."
6. Scientific foundations. The more fundamentally scientific game problems ought to qualify for fellowships and grants from such organizations.

It is my impression that the conservation public is willing to support direct general treasury appropriations for game research on a larger scale than the universities have as yet asked for.

Money and scientific facilities are not usable without the guidance of game experts. Some universities have obtained qualified men directly from the U. S. Biological Survey, such men being assigned to field headquarters at the university. The Survey also offers advisory service for specific activities such as game fellowships. The fellowships will eventually create an additional supply of game experts suitable for the guidance of university programs.

There has been a perceptible acceleration of game research in the past few years. Three years ago there were only two or three full-time workers outside the U. S. Biological Survey, which was and is, of course, the natural clearing-house for such work. Today—the universities alone have at least twenty-two men, with new accretions every few weeks, while a total of projects—full or part-time men—under way is thirty-one. The financing of the twenty-two university projects is as follows:

| | |
|---|---|
| By game commissions | 11 |
| By industrial fellowships | 4 |
| By universities themselves | 2 |
| Privately or by associations | 5 |
| | 22 |

Possibly this acceleration would have been greater did not many university administrators judge the present opportunity for game research by outworn standards. Until recently ornithology and mammalogy were something different from what is here advocated. They were not fundamental sciences, in that they did not deduce laws, or use quantitative methods. Neither were they practical, in that they did not tell what to do to land—although they occasionally concluded what to do to laws.

Happily, the more recent work has set an entirely new standard which will appeal, I think, to both the fundamental biologist and the agricultural administrator when they become acquainted with it. Stoddard's Georgia Quail Investigation has set the pattern for the new method. His report, just coming off the press, will illustrate my meaning better than I can explain it. His technique consists of an alternation of field observation to get "leads," and controlled experiments to test their validity. As far as I know, his was the first attempt to weigh all the factors which determine the abundance of an American game species. He ends with almost an equation for the abundance of quail. This, as nearly as I know, is fundamental ecology. On the other hand, he also ends up with a distinct system of practice for the landowner. This, as nearly as I know, is applied ecology or agriculture.

Some universities are starting to teach game management as well as to conduct game research. This is admirable, provided it be not overlooked that facts about game must be found before they can be taught. Writing curriculums for game courses is as easy as pasting labels on a row of bottles, but is important only when there is something in the bottles.

Game education can avoid one of the mistakes made in forestry. It should foresee the desirability of an early choice between the various possible degrees of education. Training for game research, game administration and game keeping are three very different things, not necessarily combined to advantage in a single institution. In addition, there is a very definite place for what might be called "orientation courses" in game, aimed to give the prospective farmer, forester, county agent, or "liberal arts" student an intelligent appreciation of what game management is, without necessarily qualifying him for professional practice.

I am afraid that some agricultural colleges are deterred from undertaking a game program by too superficial an appraisal of what the farmer wants. I have heard it argued that inasmuch as trespassing hunters have in some places become an intolerable nuisance on farms, it would be impolitic for an agricultural college to encourage the production of more game. This viewpoint fails to realize that the hunter-trespass nuisance is simply one of the proofs that the demand for game crops has outstripped production, and that no orderly system of disposing of the crop is as yet in existence. A similar underproduction in other farm crops would be regarded with anything but alarm. Game is the one farm crop of which there is no present or prospective overproduction. The evolution of a mutually profitable relationship between sportsman and farmer is a relatively simple matter. Indeed Michigan may be said to have already found one in her idea of farmer-sportsman cooperatives.

The technique of farm game management consists, by and large, in devoting the less valuable parts of each farm unit to game cover or food. It seems to me that this presents a timely opportunity to reduce the present overproduction of farm crops, without depopulating any particular farming area. I have already admitted that no orderly system for the marketing of game crops is as yet perfected, but one would soon develop if the over-demand for shooting privileges were geared up to the existing under-demand for marginal farm lands. In the solution of these problems of game economics it is by no means necessary for the university to take an *ex parte* attitude. Why not regard the farmer-sportsman relationships as a research problem, and undertake experiments to find the answer?

Even in the absence of an orderly method for the farmer to dispose of his game crop, there can be no doubt that game management on farms tends to add to beauty of the land and the variety and interest of farm life. From my viewpoint, this alone warrants full steam ahead on the part of the agricultural colleges.

A pecan tree just beyond the old Stone Ware home, on route 30, with an annual harvest of more than two thousand pounds of nuts, has caused it to be termed the "largest pecan tree in the world." It has been producing nuts for more than a hundred years.

# *Short Resume of Bureau of Education's Work*

## *January-June 1932*

*By* ESTELLE V. COTTMAN
*Assistant Director*

TIME was when many people residing in Louisiana knew relatively little about the natural resources of their State. Today, not only the adults, but the children as well, are conversant with Louisiana's natural gifts, and have quite definite knowledge about the laws governing their protection.

Throughout the State there has developed in the citizenry an appreciation of conservation principles that is most gratifying to those who are earnestly endeavoring to arouse interest in all conservation measures.

Not a small amount of this newly manifested interest has been due to the exertions of the Bureau of Education, whose work in the lecture hall, in the schools, in the clubs, and in the camps goes steadily on, day after day, and month after month. There is nothing spectacular about this service, and the great majority of Louisiana's citizens scarcely realize that it is in progress, although an amazing change is gradually making itself felt in the mental attitude of both old and young in regard to all matters conservational.

During the last six months the Bureau has been especially busy along several lines, all looking forward to better service to the schools and to the youth of the State.

The Conservation Museum, with an auditorium where pupils from the various city schools assemble to listen to lectures on such subjects as birds, fur bearing animals, forestry, fish, and other sea foods, has had its exhibits of birds and animals greatly increased.

One of the most valuable additions to the specimens exhibited at the Museum is the Ivory-billed Wood-pecker, a bird that has not been reported since one was seen in Florida six or eight years ago. So important was this discovery that Dr. T. Gilbert Pearson, President of the National Association of Audubon Societies, who had been searching for this bird since 1891, came to Louisiana immediately to see the living birds. A rare specimen of this nearly extinct creature has a display case all to itself at the Museum.

Among the attractive specimens collected recently are four White Ibises, taken near New Iberia, La., and also a Florida Wren, which is rare in Louisiana. A handsome Louisiana wild turkey has been collected recently, and there have been several specimens of beavers and deer mounted lately, besides a great number of other interesting and rare examples of the State's wild life.

The Forestry exhibit is housed on the second floor of the Museum, and has recently been greatly improved and enlarged. This section has been arranged to represent the physical features of the natural habitats of Louisiana's most important birds and animals. Here are found in the most life-like settings such animals as the mink, rabbit, squirrel, fox, and deer.

There is also a large collection of various shore birds found in the State, arranged along a sandy beach, and looking as if they would take flight at the slightest sound.

Over these objects sweep the green branches of Louisiana's pines and oaks, while arranged near-by are specimens showing the leaves, bark, cross sections, and fruit of our native trees .

Such allied products as pine oils, tar, resin, turpentine, storax, paper pulp, and paper products are set forth in an attractive manner.

The average observer will find much to interest him in the different phases of Spanish moss that are featured in this exhibit. It is shown in every shape, from the raw product through all the stages of the curing process, until it is in the form available for stuffing mattresses and automobile cushions. Braided horse-reins and horse-collars are also shown made from this product.

The Fishery Exhibit also has been extended and improved, and shows many new specimens. Several of those curious creatures, the southern sea horses, are on display. These strange animals, about five inches in length, swim vertically in the water and rest with their tails wound around the stalks of sea weeds. The enormous saw-fish, stretched like an aeroplane along one wall of the lecture room, always attracts attention. Many new species of Louisiana's aquatic life, from both salt and fresh, have been recently acquired.

A rapid stride forward was made when the Department purchased a number of new moving picture reels, showing the wild life of the State in its native habitat. Many activities, such as hunting, fishing, trapping, forestry, oil and gas production are shown daily at the Auditorium. These visual reminders of our State's natural and commercial activities present in pictorial form weightly reasons for passing and enforcing laws for the protection and conservation of Louisiana's natural gifts.

These motion pictures—both silent and talking—have been shown to large audiences over the entire State. They have spread Louisiana's wealth of natural resources before the amazed eyes of hundreds of observers at universities and colleges, high and grammar schools, boys and girls clubs, scout organizations, civic, bird, and nature clubs, industrial and fraternal organizations, at encampments of all kinds, at folk schools and at fairs. Once two representatives of the Bureau showed the movies at the New Orleans Tuberculosis Hospital, whose inmates, in all stages of the dreadful disease that kept them interned, seemed to enjoy the sight of Johnny Mink and old Mrs. Muskrat as much, if not more, than did their more healthy observers.

Lectures, both proceeding and accompanying the showing of the pictures, are given by trained lecturers, who explain the different phases of the resources to their audiences, and who stress the need for the enforcement of laws conducive to their protection and conservation.

During the last six months many schools have availed themselves, of the opportunity to visit the Museum, to see the pictures, and to hear the lectures. The Normal and the high schools, particularly, have attended the lectures during this period, and much appreciation is shown for this service by one of the faculty of the Warren Easton Boys' High School, who each term brings his students on succeeding days to supplement their class room knowledge by visual instruction.

To carry the message of conservation to the outlying parishes, the Bureau sends trained workers to the schools, camps, clubs, etc. These trips are not taken in a haphazard fashion, but each itinerary is carefully planned so that the lecturer will visit the greatest number of schools, public and parochial, white and colored, in each parish. The lecturer, on entering the parish, pays a visit to the parish Superintendent of Education's office, where the routes are discussed, and any changes are made that the Superintendent suggests to expedite the work and to reach the greatest number of children. In practically every parish the representative of the Bureau has received 100% cooperation.

The lecturer carries a small exhibit of stuffed and mounted birds and animals, and pelts of the most important fur bearers, besides a goodly assortment of conservation literature for the teachers, the children, and for the school library. While making a trip to the schools the lecturer has frequently responded to calls from women's clubs and civic and fraternal orders, to give short talks on conservation matters. The Bureau is always ready to cooperate with any organized group if it is possible to do so without seriously disarranging the school schedule or incurring unnecessary expense.

During April and May the lecturer visited Acadia, Calcasieu, Cameron, Vermilion, Jefferson Davis, Allen, Vernon and Beauregard, where she found the teachers and pupils intensely interested in the problems of Conservation. Especially were they interested in learning more about the birds and animals in their own parishes.

During June a representative of the Bureau attended Camp-Ki-ro-li near Monroe, La. She instructed scouts in nature study, bird study, and conservation and gave the "merit badge" examinations. Each year the Bureau of Education sends its representative to scout camps to assist in this great work.

Another step forward was made when the Department organized the Louisiana Nature Guardian Club, a Club for all school children in Louisiana between the ages of seven and eighteen. Its purpose is to instill in the children's minds a knowledge of their State's natural resources, and an appreciation of their economic value. They are also taught to take a protective interest in the State's wild life.

The membership already includes many thousands. Each member signs a pledge to help conserve the resources of the State, wears proudly a beautiful lithographed bird button, and receives a handsome certificate, and informative literature about birds, animals, fish, and forests.

In order to help the Club work and to keep it uniform in the schools, there have been issued a comprehensive "Nature Guardian handbook" and an "Outline for Nature Guardian Supervisors." The "Handbook" furnishes a plan by which a Louisiana bird animal, fish, tree or flower, is to be studied each month, and extends over two years, of eight show month's each. The "Outline" contains all information for forming and conducting Nature Guardian Clubs, and is a great help to the teachers, supervisors, and Senior Guardians upon whom the success of the clubs depend.

## TROUT STREAM IS SET ASIDE FOR FISHERWOMEN

The state is going to set aside a trout stream for Connecticut fisherwomen, where they won't have to complete with male anglers.

A woman game warden will be employed, Commissioner William A. True announced, to see that state regulations are obeyed.

Beside enforcing the law, the warden will assist women in learning the art of angling, for the stream will be restricted to fly casting.

# Relationship of Urban Unemployment to Land Utilization and Settlement

(Resolution formulated by the National Land-Use Planning Committee and adopted by the National Advisory and Legislative Committee on Land Use, May 3, 1932; revised and made public June 23, 1932).

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These recommendations, formulated by the National Land-Use Planning Committee, were considered by the Advisory and Legislative Committee on Land Use at its meeting on May 2-3, 1932. The recommendations were adopted in principle and it was agreed to give them general distribution. The Committee also took steps to have the essential principles of the above recommendations embodied in a Senate joint resolution (No. 154), which was introduced by Senator McNary and referred to the Committee on Agriculture and Forestry. Since then S. J. R. No. 154 has been modified and reported as S. J. R. No. 169.

THE National Land-use Planning Committee has had brought to its attention the widespread tendency for the unemployed to look to the land as a means of remedying their condition and the activity of numerous agencies, philanthropic and semi-philanthropic and commercial, in developing plans for placing unemployed families on the land.

The Committee recognizes that the volume and methods of land settlement are related in an important way to the purposes for which it was created. The National Land Utilization Conference held in Chicago largely grew out of the recognition of the existence of surplus agricultural production, the cultivation of lands that are not adapted to profitable agricultural production, and the heavy cost to the public growing out of the planless distribution of population in sparsely settled areas.

If unemployment is to be long continued, it may give rise to a number of serious problems in land utilization. At the present moment, however, the Committee feels that the time is not yet ripe to determine whether unemployment will continue to a sufficient extent to require a consideration of its long-time relationship to a program of land utilization. However, the Committee recognizes that an active movement is under way and that there is need for a public policy to guide and direct the movement and to prevent the adoption of unwise types of land settlement.

After considering the problem in a preliminary way, the Committee referred the subject to its Technical Committee on Land Settlement, composed of about thirty individuals in Washington and throughout the country who are in a position to be familiar with the problems of agricultural settlement. On the basis of the report of its Technical Committee, the National Land-Use Planning Committee has formulated the following statement of principles and recommendations to the National Advisory and Legislative Committee on Land Use:

I. There is great danger that the acute consciousness of the magnitude of the present problem of unemployment may result in a misunderstanding of the character of the opportunities available in the country-side for giving employment to large numbers of families and supplying them with subsistence. City folk, unfamiliar with agricultural conditions, are prone to develop exaggerated ideas as to the quantity of land suitable for cultivation, the ease with which a living can be obtained in the country, and the extent to which the unemployment problem can be solved by a back-to-the-land movement. It seems important, therefore, that emphasis be placed on the following broad conclusions with reference to these opportunities:

1. Some of those who have become unemployed are persons who had retained some connection with the country, either because they had recently moved from the farm, or through relatives living in the country. A good many of this class have already returned to the farm and others, by reason of their connections in the country, will be able to make the shift without public assistance. Under present conditions this represents a normal movement which need not excite concern. In numerous cases, young people are returning to the home farm, other unemployed are making arrangements to live with country relatives, and retired farmers are returning to the farms they left.

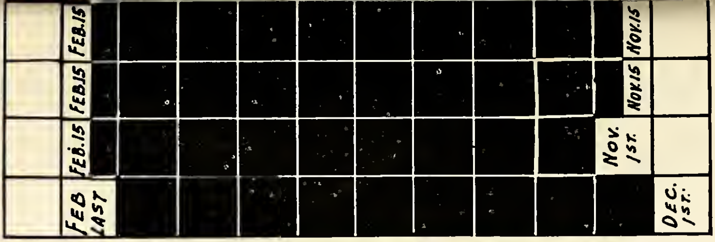
2. The available supply of improved farms adapted to commercial production of general crops and livestock does not hold out promise of extensive opportunity for the unemployed to improve their condition in this way. While a good many of the farms normally adapted to agricultural production have gone into the hands of creditor agencies, our information indicates that an extensive demand for renting farms has absorbed a large proportion of the better types of farms held by creditor agencies. It is true that numerous farms suitable for commercial production are for sale at prices which seem low compared with those which prevailed several years ago. However, it is certain that the great ma-

(*Continued on page 37*)

# *Louisiana Fur, Game, and Fish Laws, 1932-1933*

■ BLACK Squares Denote Close Seasons ☐ WHITE Squares Denote Open Seasons
Numbers in Squares are Open Dates

| MIGRATORY GAME BIRDS | JAN. | FEB | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEP | OCT. | NOV. | DEC. | BAG AND POSSESSION LIMITS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WILD DUCKS<br>Except Wood Duck | JAN.15 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | NOV.16 | □ | 15 daily, 30 in possession at one time.† |
| WILD GEESE | JAN.15 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | NOV.16 | □ | 4 daily, 8 in possession at one time.† |
| COOT (POULE D'EAU) | JAN.15 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | NOV.16 | □ | 25 daily, 300 season. |
| SNIPE | JAN.15 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | NOV.15 | □ | 20 daily, 240 season. |
| DOVE | JAN. 31st | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | DEC. 1st | 25 daily, 300 season. |
| WOODCOCK | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | DEC.1 TO 31st | 4 daily, 22 season. |
| RAILS | JAN. 31st | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | NOV.15 | □ | 25 daily, 300 season. |
| GAILLINULES | JAN. 31st | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | NOV.15 | □ | 15 daily, 300 season. |
| SORA | JAN. 31st | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | NOV.15 | □ | 25 daily, 300 season. |
| RESIDENT GAME BIRDS | | | | | | | | | | | | | |
| BOB WHITE<br>(Quail or Partridge) | □ | FEB.15 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | NOV.15 | □ | 15 daily, 120 season. |
| WILD TURKEY | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | Closed for 5 years. |
| GAME ANIMALS | | | | | | | | | | | | | |
| DEER | □ | FEB.15 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | NOV.15 | □ | Bucks only.<br>1 daily, 5 season. Illegal to |



| | |
|---|---|
| BEAR | 1 daily, 5 season. |
| SQUIRRELS | 10 daily, 120 season. |
| RABBITS | No limit, may be sold in open season. |
| FUR ANIMALS<br>Muskrat, Mink, Opossum, Otter, Raccoon, Wolf, Fox, Skunk, Etc. | Trap limit 250, traps must be visited daily. |

## HUNTER'S LICENSE PROVISIONS

### LICENSE YEAR JULY 1 TO JUNE 30

HUNTING LICENSES:

| | |
|---|---|
| Residents, hunting license | $ 1.00 |
| Non-residents, four consecutive days' hunting license | $ 5.00 |
| Non-residents, hunting license | $15.00 |

TRAPPING LICENSE:

| | |
|---|---|
| Residents only, does not allow hunting, good only in Parish where trapping is done | $2.00 |

## FISHING LAWS

### FRESH WATER GAME FISH

| KINDS | Size Limits | Creel Limits |
|---|---|---|
| BLACK BASS (green trout) | 10 inches or more | 20 daily |
| YELLOW BASS (striped bass) | 7 inches or more | 25 daily |
| WHITE BASS (barfish) | 7 inches or more | 25 daily |
| CRAPPIE (white perch, speckled perch, sac-a-lait) | 7 inches or more | 25 daily |
| SUNFISH (perch, bream, goggle-eye, blue-gill, etc.) | 5 inches or more | 100 daily |

### CLOSE SEASONS AND CLOSE ZONES

No state-wide close seasons on game or commercial fish. Department of Conservation can authorize close seasons or close zones in any waters where necessary, otherwise fish can be taken at any time or place provided size limits and other restrictions are observed.

## ANGLER'S LICENSE PROVISIONS

### LICENSE YEAR JANUARY 1 TO DECEMBER 31

| | |
|---|---|
| Residents, per annum<br>Required of all persons 15 years of age and over. | 50c |
| Non-resident, per annum<br>Required of all non-resident anglers fishing for fresh and salt water game fish, irrespective of tackle or bait used. | $2.00 |

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ISSUED BY **DEPARTMENT OF CONSERVATION**

ROBT. S. MAESTRI, COMMISSIONER

NEW ORLEANS COURT BUILDING, NEW ORLEANS

TELEPHONES MAIN 1914-1915-1916

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†*NOTICE—Federal Bag Limit of 15 ducks and 4 geese daily must be observed.*

DOVE SEASON IN LOUISIANA—DECEMBER 1 THROUGH JANUARY 31—MUST BE OBSERVED AS ONLY OPEN SEASON.

# *Planning Use of Land for Farm Forest and Highway . . . . . .*

By FRANKLIN D. ROOSEVELT
*Governor, State of New York*

## *Governor of New York Explains Survey of Soils and Physical Characteristics as Intended as Guide in Development of State*

PEOPLE need to be reminded that besides its interest in the commerce, the finance, the manufacturing and the arts and science and literature of the Nation, the State of New York also has a stake and an interest in agriculture. We have not wholly outgrown the fundamental occupation on which our State and our Nation were built. Ours is still one of the leading agricultural States of the Nation. Its agriculture will always remain, so far as it is possible for us to see today, one of the foremost of our industries.

In this State we have been definitely planning on the basis that our agriculture is permanent, that it will always be of fundamental importance, and we have realized that we must so manage our economic future and so govern our political arrangements that the enduring needs of agriculture will be given the consideration that belongs to them.

In so doing we are not planning for the farmers solely, but for the rational use of the resources Nature has given us, and for the welfare of our population, urban as well as rural, present and future.

Besides the present management which has to do with the productiveness of our farms, the economical handling of their crops, the conditions of living of the farm population and the right adjustment of facilities and the costs of government, we have embarked on a rather ambitious program of planning the best use of the land. Strange as it may seem, that is a novelty in America today, though 300 years have elapsed since this very region was first settled by our ancestors. For 300 years we have been making the land as it came, adjusting ourselves to it by the mehtod of trial and error. The tragic thing about this is that it sometimes takes generations of back-breaking toil on stubborn acres to discover that they never should have been used for farm homesteads because they are not fit for it—an example of sheer economic waste.

We have committeed too many times in our history the equally tragic error of expanding where we should have contracted—of "reclaiming," as it was called, vast acres for the plow when there was plenty of good land available that it did not need to be reclaimed. And so today, in spite of the great increase in our population, the farm acreage problem in the United States is more a problem of reducing our acreage on a sound scientific basis—reducing it where it ought to be reduced—than of expanding it.

There are other uses for land than the growing of food crops, uses which in the past we have done much to destroy by an unwise haste to turn every acre possible into plow land. In that course we have gone far in disturbing a balance of Nature which contributed toward a successful agriculture and in other ways toward balanced and healthful living. Only a generation or two ago, for instance, we were still blind to the fact that serious evils could come from the destruction of forests. There were still plenty of trees and we did not realize the beneficent effects of timbered hillsides in protecting our water supplies, guarding our soils against erosion and saving our valleys from disastrous floods.

But now we begin to see things in a clearer light. We want to restore all the values that the destruction of the forests menaced. We are taking steps to preserve the mountain forests and to plant new forsets to replace those that were shorn away.

The program of forest preservation and of reforestation in which New York State is quite properly the leader among all the States in the Union is merely one step in a direction which indicates the new orientation of our views regarding land uses. Economic changes have had a part in developing that new viewpoint. One of these changes is the rapid improvement in agricultural methods that have made our farmers more efficient and have made each acre of soil more efficient. Another is the coming of the motor age and coupled with it, the mechanization of agriculture. This has had many effects. It has greatly reduced the consumption of hay and other feeds for animals and has thus struck an economic blow at an important branch of agriculure, reducing the demand for acres to produce these crops. But it has also shortened time and labor in getting products to market and by making farm labor more effective has contracted the demand for it. It has made necessary many important readjustments, readjustments that in many ways have improved the lot of the rural dweller but in other ways have been tragic.

One general effect that has forced itself on our attention is the abandonment of farms that has been going on with great rapidity in this and many other States in the last 20 years. It has been estimated that this farm abandonment has been going on in this State at the rate of 250,000 acres a year in recent years and there is an accumulation of close to 4,000,000 acres of this abandoned farm land in this State alone.

This farm land abandonment reacts on our whole scheme of activities of government. It lops values from our tax rolls, it isolates communities and makes the provisions of roads and schools and other facilities of living difficult for those who remain. Obviously, in such a situation it becomes folly to go on planning and installing such improvements for areas that can not be expected to retain an agricultural population.

Obviously, if we wish to save ourselves from a stupendous waste of public and private funds, we need to know what is going to be the future of farm development and the general use of the lands of the State. We should hire a few prophets to tell us. And that, as a matter of fact, is just what we are doing. Prophecy along certain lines is not an impossible thing. Men for ages have been getting rich by a kind of prophecy that consists of knowing the facts of the present. When we know those, we don't need to do so much gambling on the future.

The prophets whom we have put to work in the last two years in New York State are soil experts and agricultural economists, who are members of the staff of the State College of Agriculture at Cornell University. They are engaged in a 10-year program of study of the soils and physical characteristics of the whole State with a view to mapping the lines of its future development. In the course of that study they are taking account, not merely of the possibilities of agricultural production, but of the probable trend of population and of industry. They are considering agricultural markets as well as agricultural supplies. They are considering where roads will need to be built or improved, where electric power and telephone lines may properly be installed, where there will need to be expansion of school facilities, where villages and cities will grow. On the other side, they are considering where more land will be abandoned, where roads can be given up eventually, where schools will disappear, where towns and villages will dwindle.

It must not be assumed that this study is based on a belief that agriculture in the State of New York is decadent. Farm abandonment doesn't mean anything of the kind, for the very reverse is true. All the time this land abandonment is going on, we are witnessing an increase not only in the efficiency of our agriculture, but a general increase in production and—allowing for a period of depressed prices—a general increase in the value of farm products in the State. We are not planning for decay, but for growth along the lines growth will take place. We are planning for the uses to which the land will actually be put, whether for farming, for forestry, for city building or for recreation.

While the work has gone forward up to date in only a relatively few counties of the State, it has already had important results. One outgrowth of it is that by virtue of the studies completed and in progress the Extension Service of the Agricultural College is able to give invaluable advice to farmers on future development and to aid people from the cities in finding new locations suited to the forms of production they have in mind. The survey has also produced information of great value to us in carrying forward our reforestation program, indicating the areas where tree culture will be the only profitable use for the future. The data gathered has been profitably used, too, by telephone and electric light companies in revising their plans for extension of service. Its usefulness in all these lines will be multiplied from year to year as the work is extended to new areas and new forms of inquiry.

## I NAMED HIM ACE

*He came to my home, all wet and cold*
*Looked to be about four months old*
*Had a pretty face, although sad,*
*I took him in to make him glad.*

*Gave him a rub, he could hardly stand*
*Shook his tail then licked my hand,*
*Oh what gratitude, its simply fine,*
*Your home is here, for all time.*

*Came around, got strong and trim*
*Think I'll make a good dog of him*
*Could do anything but did not speak*
*Simply wonderful, just a freak.*

*Took him hunting, it was on snipe*
*The first one flushed gave him a fright*
*In a little while, I killed a few*
*He did not worry, knew what to do.*

*This same dog, I don't like to boast*
*Can tackle anything from coast to coast*
*On all his points, or his retrieve*
*I've never known him to deceive.*

*Thanks to the day he came to my place*
*Made me so happy I named him Ace*
*Don't know his kin, but sure indeed*
*He must have come, from a good breed.*

R. E. SAUCIER.

# *Louisiana Nature Guardians*

*"Upon my honor, as a Louisiana Nature Guardian, I promise to take care of all our natural friends, to guard and protect them to the best of my ability, and as far as possible influence others to do the same."*

ESTELLE VERJIE COTTMAN, *Editor*

WHEN the Nature Guardian Club of Louisiana was formed several years ago, it met an instant and hearty response from the teachers and the school children all over the State. From a small interested group it has grown steadily into a mighty force of thousands of young conservationists. These children are the proud possessors of handsome lithographed badges, and certificates of membership. New Clubs are being formed each week and it is the purpose of the Educational Bureau to enroll every Louisiana boy and girl, white or colored, under the Nature Guardian banner.

## HOW YOU CAN BECOME A NATURE GUARDIAN

### YOUR PART

Consult your teacher.

Ask that the purpose and plans of the Nature Guardian Club be explained to you and the class.

Ask for an application card.

Get a responsible person to indorse it, after proving that you fully understand the duties of a Nature Guardian.

Sign the application and mail the card postpaid, or give to your teacher, to send with cards from all the class.

### OUR PART

We send the application card.

We send you a handsome badge, a certificate of membership, Nature Guardian pamphlets, and other literature.

This is all free, and is carried on with the purpose of instilling in the children's minds a knowledge of Louisian's wild life and a thorough understanding of its economic value to the State.

It also aims to develop individual humanitarianism. Even within this short time an amazing improvement has been made in the mental attitude if our young folks toward the conservation and protection of Louisiana's natural resources.

## EDITORIAL

My Dear Guardians:

I suppose you Guardians think that I harp on the subject of bird conservation. I admit it. I am, and should be, deeply interested in any measure that has for its main purpose the protection and conservation of birds. Just at present our Department is spending much effort in establishing a wonderful game and fish preserve in the Parishes of Winn and Natchitoches. There the birds of the State will find food, and will be safe from their enemies.

Nearly all communities of any size in Louisiana have some areas reserved as parks or playgrounds. The attractiveness of such places is greatly enhanced by the presence of song birds. Their beauty and their song amply repay any output of time and effort to make the community parks safe for them. In fact, the bird baths, bird houses, and bird fountains, so necessary to the comfort and welfare of our feathered friends, may become added decorative features of the parks themselves.

In Louisiana, because of the mild climate, there is small need to build winter feeding stations, but they should be maintained throughout the more northern districts and in any place the sight of numbers of feeding birds certainly is interesting to the general public and to children especially. But, as I have said so often, it is distinctly unfair to attract birds to a park or to feeding places and then refuse them the protection they deserve.

In "Community Bird Refuges" there is quite a tribute paid to the State of Oregon, where the law provides that all incorporated towns and cities and all public parks and school grounds shall be, without additional local or general legislation, bird and game sanctuaries.

Would it not be a fine thing, Guardians, if every campus and school yard in Louisiana could qualify as a bird refuge? You can make them safe for the birds if you are true to your pledge, and if you try to influence all your friends to help protect and care for them.

With best wishes for all of you dear Guardians, I am,
Sincerely yours,

THE EDITOR.

Ida sends in a lovely poem which I am sure you will all appreciate as much as we did.

### OLD TREES

Old Trees! Old Trees! in your mystic gloom
There's many a warrior laid
And many a nameless and lonely tomb
Is sheltered beneath your shade.

Old Trees! Old Trees! without pomp or prayer
We buried the brave and the true,
We fired a volley and left them there
To rest, old trees, with you.

Old Trees! Old Trees! Keep watch and ward
Over each grass-grown bed
'Tis a glory Old Trees to stand as guard
Over our Southern dead.

Old Trees! Old Trees! We shall pass away
Like the leaves you yearly shed
But ye! Lone sentinels, still must stay
Old Trees, to guard our dead.

Respectfully, a Guardian.

IDA M. CAFFREY.

## SWALLOWS RIDE PLANES TO GET OVER MOUNTAINS

The interesting story below, about the swallows, was taken from the American Junior Red Cross News. It is a fine story of man's love for creatures in distress:

Fifteen thousand swallows flew across the Styrian Alps this last autumn, not on their own wings but in airplanes. Another thirty-five thousand made the trip by train.

It happened this year that an early, very severe cold snap caught the birds before they had started their usual migration to the south. Following their instinct, they started at once on their long journey. But to get to the warm Mediterranean they had to cross the high and cold Styrian Alps. And the weather was getting colder all the time. They could not make it. Thousands and thousands of them fell along the route, numbed with cold and exhaustion.

Then the Viennese Society for the Protection of Birds took pity on them. They picked them up, warmed them and fed them, and then undertook to help them on their way.

The first few groups they sent over the mountain barrier in airplanes; but soon the cold and storm that had overwhelmed the birds became too severe for airplanes, also, and the rest were sent on by train. The Austrian consul at Venice gave them official welcome.

Bird lovers in Hungary, Jugoslavia, Rumania and southern Germany also sent many of the half-frozen birds across the mountains.

---

### BIRDS

(Written For My Little Boy)

When I wake up in the morning
I hear the little birdies,
In the tree tops above,
And I know they are in love,
Singing sweet songs to you and me.

They flit from tree to tree,
To gather food and berries,
They are happy you can see;
High up upon the branches,
Singing sweet songs to you and me.

DOSSIE P. ELLISON, Jr.,
New Orleans, La.

---

### HIDDEN NAMES

In the following sentences are hidden the names of some of Louisiana's fishes and sea foods. These names are found by joining two or more words or parts of words. Example: Come on, MIN, NOW is the time to go.

1. According to her wish, a drink of water was handed to the prisoner.
2. She gave a sob as she left the room.
3. When the ship had docked, the sailors went ashore.
4. The catalogue was very large.
5. If it be so, let me know at once.
6. "It was a snap, performing for the Club," he said.
7. The boy's terrier died today.

E. V. C.

---

Welcome, Marie!

5249 Maffitt Ave.,
St. Louis, Mo.,
March 5, 1932.

Nature Guardian Editor:

I have appreciated your review on Louisiana conservation you have sent me every month. I have kept every copy and used them in my high school work.

I have wanted for many months to join the Nature Guardian Club of Louisiana. I will appreciate it if you will make me a member of your wonderful Club.

Respectfully yours,
(Signed) MISS MARIE WYNN,
5249 Maffitt Ave.,
St. Louis, Mo.

### THE HUNTER'S DOG

A hunter and his dog make a glorious pair;
No better friendship is found anywhere,
For they talk and they walk and they run and they play,
And they have their deep secrets for many a day.
That hunter's a comrade that thinks and that feels,
Who walks down the street with a dog at his heels.

He may go where he will and his dog will be there,
May revel in mud, and his dog will not care.
Faithful he'll stay for the slightest command,
And bark with delight at the touch of his hand.
Oh! he owns a treasure which nobody steals,
Who walks down the street with a dog at his heels.

No other can lure him away from his side;
He's proof against riches and station and pride;
Fine dress does not charm him, and flattery's breath
Is lost on the dog, for he's faithful till death.
He sees the great soul which the body conceals—
It's great to go hunting with a dog at your heels.

—W. P. WOOD.

Marion sends us some little verses that tuck away a surprise for us at the end:

### TO SYLVIA

Ah, Sylvia is exquisite,
She is in fact, sublime,
Ah, Sylvia is exotic,
Most gorgeous, of all time,

Her grace; 'tis inexplainable,
Her posture is so grand,
Her little equilibrium,
Is finest in the land.

So slender, coy, and winsome,
She stole away my heart,
The sweetest creature, in the world.
I loved her from the start.

Her eyes are shaped like almonds,
Of deepest azure hue,
And how she thrills to my caress,
Would quite astonish you.

And now I think it fair and just,
With explanations, "fittin,"
To tell you, why this wondrous love,
Pretty Sylvia, is my kitten.

MARION CARLETON.
McMain High School.

---

Here is a wonderful plan for the Guardians and others to follow when hunting this fall:

### OUTDOOR ETHICS CODE

(By Seth E. Gordon)

1. Your outdoor manners tell the world what you are when at home.
2. What belongs to the public isn't your own—play fair.
3. Respect the property of rural residents—ask before using it.
4. Save fences, close gates and bars, go around planted fields.
5. Do your shooting only where absolutely safe—see clearly before pulling the trigger.
6. Respect the law—take enough legal fish and game to eat, then quit.
7. Protect public health—keep springs and streams clean.
8. Clean up your camp and don't litter the highways with trash.
9. Carelessness with fires is a crime against humanity —prevent them.
10. Leave flowers and shrubs for others to enjoy—help keep outdoor America beautiful.

---

8553 Park Lane,
St. Louis, Mo.
Aug 24, 1932.

Dear Editor:

Would it be possible for me, as resident of St. Louis, to be a member of your Nature Guardian Club? I am seven-

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Lafayette St.

The House of Service

Phones
3564-3565

BATON ROUGE - - - LOUISIANA

teen years old and am interested in beautification, and in the guarding of Nature's intimate friends.

I am interested in architectural work as my vocation, and, as you see, this has helped me to feel more zeal and inspiration in connection with your Club.

Please, if you can do so, send me your application card and other information about your Club as soon as possible.

I had the extreme pleasure of seeing your exhibit at our Arena in 1931, and it was fine, I want to congratulate your Conservation Department on their fine work.

Very truly yours,

FRED W. GRENLICH.

We have made Fred an honorary member and shall be glad to hear from him from time to time.

Mrs. Jessie Corley sends the following poem:

### PINE NEEDLES

If Mother Nature patches
The leaves of trees and vines,
I'm sure she does her darning
With the needles of the pines.

They are so long and slender,
And sometimes in full view,
They have their threads of cobwebs,
And thimbles made of dew.

### HOW TO MAKE A CAMPFIRE

1. Don't start a fire if there is any danger of being unable to control it.
2. Select a place away from living trees, dead stumps and down logs.
3. Clear a space five feet in diameter of all leaves, dead grass, etc.; build a fire only on mineral soil.
4. Don't trust a fire by leaving it unattended.
5. Build a small fire; The Indian saying, "Indian build small fire, sit up close, keep warm; White man build large fire, stand far away, freeze," is very true.

### HOW TO PUT OUT A CAMPFIRE

1. Pour on water until you think it is out.
2. Stir with a stick, turn over all the embers and pour on more water.
3. Feel the embers with your hands.
4. Leave a clean campsite, you may want to come there again.

We extend a hearty welcome to all of our new members, and hope thep will become happy, useful, and faithful Guardians.

We shall be glad to hear from our members at any time, and shall be glad to print their poems, themes, and letters about any of the natural resources of Louisiana. We hope that our next issue will contain many interesting articles by members of our Club.

Address all letters to: NATURE GUARDIAN EDITOR, DEPARTMENT OF CONSERVATION, New Court Building, New Orleans, La.

## LOUISIANA'S BLESSINGS

*There is something in our Southland that holds us in a spell,*
*A mystic, cryptic something that all of us know well.*
*There's a charm in Louisiana that thrills us through and through*
*Pervading woods and marshlands 'neath sunny skies of blue.*

*But we're apt to take for granted, as we drift from day to day*
*All the blessings that are showered on our State in every way.*
*Forgetting that our Father, in His wisdom and His love,*
*Has sent rare gifts straight down to us from Heaven up above.*

*We oft forget to thank Him for the oak trees and the pines,*
*For the fields of corn and cotton, and the fruitful berry vines.*
*We forget the furry creatures, and the game birds, wild and free.*
*And the mockingbird's sweet trilling in a burst of melody.*

*How often do we call to mind the joys of lake and stream,*
*When in springtime we are off to fish for trout and perch and bream?*
*How often do we voice our thanks for gifts from mine or sea?*
*How often do we realize how greatly blessed are we?*

*We, who live in Louisiana, where God's horn of plenty spills*
*Richest gifts on field and forest, on the meadows and the hills,*
*Should give thanks for all His goodness, for His bounty, full and free,*
*For in blessing Louisiana He has blessed both YOU and ME.*

—ESTELLE VERJIE COTTMAN.

Rafts set out by St. Bernard Parish trappers to provide temporary refuge for muskrats during the 1927 high water.

# Fisheries Displace Minerals as First Alaskan Industry

## Forest Resources Assure Development of Extensive Lumber Trade, Says Department of Commerce

BY EMMETT A. CHAPMAN
*Far Eastern Section, Bureau of Foreign and Domestic Commerce, Department of Commerce*

PROSPERITY in Alaska depends to a very great extent upon the current demand for two products — fish and minerals. There are other products important to the Territory, and vast undeveloped resources; but, to the present time, Alaska has depended on these two for its well-being.

In the early days of the Territory, minerals, particularly gold, were the mainstay. In recent years, however, a new gold has been discovered in the waters in the form of salmon; and today the output of fish far outstrips that of minerals.

In 1916, the peak year for mining in Alaska, minerals valued at $48,386,500 were recovered. From this time, however, the trend was downward until, in 1930, mines produced only $13,812,000 worth of minerals, chiefly gold and copper. The output of fish in 1930 was valued at $37,679,000.

With the exception of gold and coal, mineral production has declined during the past two years. The decrease has been due to the low prevailing prices for such metals as copper, silver, and lead, together with the deterrent effect of these low prices in discouraging new undertakings, and full exploitation of existing mines.

With the exception of coal, the bulk of all minerals recovered in Alaska is shipped to the United States. The coal output is consumed locally; and, owing to the difficulty of distribution, imports from the United States and British Columbia are greater than domestic production. Silver is produced in Alaska as a by-product of other metals, chiefly copper and gold.

Shipments of minerals to the United States during 1931, were valued at $11,491,981 compared with $13,336 202 for the preceding year, the decline being due largely to smaller exports of copper and to falling price levels.

Fishing, Alaska's major industry, experienced a fair year in 1931, although prices received for the various products shaved profits, and some small operators discontinued operations. Shipments of canned salmon, however, the chief output of the industry, exceeded those of 1930, both in quantity and value. Exports of frozen salmon and halibut were also larger.

The value of fish and fish products shipped to the United States in 1931, reached $30,168,799 compared with $37,224,795 in 1930, the decline being due, as mentioned before, to lower prices as shipments of most items increased in quantity.

Furs and fur skins follow after fish and minerals, among Alaska's important industries. Shipments during 1931 were valued at $2,811,067 compared with $3,146,926 for the preceding year, the decline being due to lower prices, as all items appearing on the list, except red fox, increased in quantity.

The Alaskan game law, passed in 1925, provides for a commission of five members to administer the provisions of the regulations, and is designed to preserve the wild life resources of the Territory. Regulations are revised annually in accordance with changing conditions.

The Alaskan seal herd has been under the control of the United States since 1910, by authority of the North Atlantic Sealing Convention.

Reindeer farming is important to the Territory, and especially to the native population. In 1891, 10 animals were obtained from Siberia and subsequent importations brought the total to 1,280 during the following 10 years. At present the deer herd is estimated at more than 600,000.

Aside from fish, minerals, furs and reindeer meat, little is shipped from the Territory to the United States except small quantities of stone and lumber and some trophies and curios.

Forest reserves and water power are important among Alaska's resources. It is estimated that approximately 13 per cent of the national forest area of the United States is located in Alaska, and that it is capable of yielding 1,000,000,000 board feet annually.

# LOUISIANA'S SEMI-ANNUAL FOREST FIRE REPORT

V. H. SONDEREGGER
*State Forester*

THE semi-annual forest fire report for the period January 1-June 30, 1932. The increase in acreage lost is two-tenths (.2) per cent over the same period for 1931. However, the forest acreage for 1932 was increased by 479,000 acres, making a total of 5,597,840 acres now under intensive protection. A highly efficient organization of forestry employees maintain a twelve months' patrol. Twenty-two steel lookout towers, from eighty to one hundred feet in height, are located on the protected forest units. A total of three thousand miles of telephone lines connect the lookout towers to the homes of three hundred employees. This system of detection for forest fires is the means of promptly extinguishing all fires.

Louisiana again is fortunate in being able to control the forest fire situation, and is continuing to hold a low loss record.

Reduction of forest fires assures the State a future supply of timber. In addition to the 5,597,840 acres that the Department is protecting, approximately 5,000,000 more acres are receiving a general supervision and Louisiana today has over 10,000,000 acres of forest lands that are increasing their timber growth. Contrary to many reports by the uniformed who predicted that Louisiana would be cut out of timber in 1932, the reverse is true. The State has a large supply of pine and hardwoods, both virgin and second growth, and will be able to continue as a leading forest products industry State, both in the South and in the Nation. The paper industry has more

TABLE No. 1—SUMMARY OF REPORTED FIRES FOR PROTECTED AREAS IN LOUISIANA.
January 1–June 30, 1932

| Protection Area | Area Protected (Acres) | Number of Fires | Area Burned (Acres) | Per Cent Burned | Average Size of Fire | Damage | | | Suppression | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Timber | Other | Total | Hours of Fighting | Estimated Cost |
| Morehouse | 149,760 | 44 | 2,354 | 1.6 | 53.5 | $ 1,405 | $ 92 | $ 1,497 | 387 | $ 102 |
| Union | 350,000 | 176 | 3,450 | 1.0 | 19.6 | 3,055 | 124 | 3,179 | 723 | 203 |
| North Louisiana | 2,200,000 | 1,084 | 44,092 | 2.0 | 40.7 | 31,174 | 1,767 | 32,941 | 9,549 | 2,291 |
| Bienville-Jackson | 800,000 | 164 | 7,350 | .9 | 44.8 | 5,586 | 364 | 5,950 | 1,696 | 439 |
| Sabine | 370,000 | 100 | 2,283 | .6 | 22.8 | 2,320 | 150 | 2,470 | 518 | 117 |
| Vernon | 80,000 | 112 | 4,042 | 5.0 | 36.1 | 2,383 | 181 | 2,564 | 1,165 | 317 |
| Beauregard-Calcasieu | 75,000 | 3 | 24 | .3 | 8.0 | 13 | ..... | 13 | 2 | 1 |
| Allen | 154,580 | 97 | 11,622 | 7.5 | 119.8 | 1,736 | 453 | 2,189 | 1,058 | 297 |
| Livingston, St. Helena and Tangipahoa | 690,000 | 253 | 17,097 | 2.5 | 67.6 | 16,577 | 655 | 17,232 | 2,243 | 528 |
| Washington-St. Tammany | 600,000 | 215 | 9,804 | 1.6 | 45.6 | 6,973 | 375 | 7,348 | 2,480 | 666 |
| St. Tammany | 110,000 | 111 | 5,954 | 5.4 | 53.6 | 3,877 | 241 | 4,118 | 669 | 183 |
| St. Landry | 11,000 | .... | ..... | .... | .... | ..... | ...... | ...... | .... | ...... |
| State Forest | 7,500 | 2 | 352 | 4.7 | 176.0 | 152 | 14 | 166 | 63 | 11 |
| Totals | 5,597,840 | 2,361 | 108,424 | 1.9 | 45.9 | $75,251 | $4,416 | $79,667 | 20,553 | $5,155 |

TABLE No. 2—HOW FIRES WERE DISCOVERED
January 1-June 30, 1932

| Discovered By | Number of Fires | Per Cent by Number | Area Burned (Acres) | Average Size of Fire (Acres) |
|---|---|---|---|---|
| Employee in Charge | 824 | 34.9 | 36,283 | 44.0 |
| Towerman | 1,312 | 55.6 | 65,654 | 50.0 |
| Other State Employee | 107 | 4.5 | 3,774 | 35.3 |
| Volunteer | 118 | 5.0 | 2,713 | 23.0 |
| Totals | 2,361 | 100.0 | 108,424 | 45.9 |

TABLE No. 3—HOW FIRES WERE EXTINGUISHED
January 1–June 30, 1932

| How Extinguished | Number of Fires | Per Cent by Number | Area Burned (Acres) | Average Size of Fire (Acres) |
|---|---|---|---|---|
| State Oragnization | 2,227 | 94.3 | 104,541 | 46.9 |
| Volunteer | 55 | 2.3 | 1,077 | 19.6 |
| Rained Out | 14 | .6 | 511 | 36.5 |
| Burned Out | 65 | 2.8 | 2,295 | 35.3 |
| Totals | 2,361 | 100.0 | 108,424 | 45.9 |

TABLE No. 4—CLASSIFICATION BY SIZE.
January 1–June 30, 1932

| Size of Fire Acres | Number of Fires | Per Cent by Number | Area Burned (Acres) | Suppression | |
|---|---|---|---|---|---|
| | | | | Hours of Fighting | Estimated Cost |
| 0- ¼ | 76 | 3.2 | 2 | 58 | $ 14 |
| ¼- 10 | 934 | 40.0 | 4,236 | 3,041 | 728 |
| 10-100 | 1,145 | 48.2 | 46,935 | 11,621 | 2,935 |
| 100-500 | 190 | 8.0 | 36,216 | 4,825 | 1,220 |
| 500-Over | 16 | .6 | 21,035 | 1,008 | 258 |
| Totals | 2,361 | 100.0 | 108,424 | 20,553 | $ 5,155 |

### TABLE No. 5—CLASSIFICATION BY CAUSE
January 1–June 30, 1932

| Cause of Fire | Number of Fires | Per Cent by Number | Area Burned (Acres) | Damage | | | Suppression | |
|---|---|---|---|---|---|---|---|---|
| | | | | Timber | Other | Total | Hours of Fighting | Estimated Cost |
| Lightning | 9 | .4 | 350 | $ 195 | $ 18 | $ 213 | 80 | $ 20 |
| Railroads | 16 | .7 | 386 | 315 | 15 | 330 | 147 | 39 |
| Campers | 46 | 1.5 | 678 | 603 | 102 | 705 | 322 | 84 |
| Smokers | 175 | 7.5 | 8,058 | 6,252 | 340 | 6,592 | 1,945 | 484 |
| Brush Burning | 87 | 4.0 | 3,362 | 2,913 | 125 | 3,038 | 779 | 198 |
| Incendiary | 1,533 | 65.0 | 77,200 | 49,570 | 3,102 | 52,672 | 13,757 | 3,478 |
| Logging | 66 | 2.8 | 1,433 | 1,319 | 50 | 1,369 | 325 | 75 |
| Miscellaneous | 428 | 18.1 | 16,837 | 14,074 | 660 | 14,734 | 3,174 | 770 |
| Unknown | 1 | .0 | 120 | 10 | 4 | 14 | 24 | 7 |
| Totals | 2,361 | 100.0 | 108,424 | $ 75,251 | $ 4,416 | $ 79,667 | 20,553 | $ 5,155 |

### TABLE No. 6—STUDY OF FIRES BY TIME OF DAY
January 1–June 30, 1932

| A. M. FIRES | | | | P. M. FIRES | | | |
|---|---|---|---|---|---|---|---|
| Time | Number of Fires | Area Burned (Acres) | Average Size of Fire (Acres) | Time | Number of Fires | Area Burned (Acres) | Average Size of Fire (Acres) |
| 1:00 | 7 | 284 | 40.6 | 1:00 | 427 | 19,470 | 45.6 |
| 2:00 | 3 | 39 | 13.0 | 2:00 | 409 | 15,629 | 38.2 |
| 3:00 | 1 | 35 | 35.0 | 3:00 | 295 | 12,061 | 40.9 |
| 4:00 | 1 | 10 | 10.0 | 4:00 | 193 | 4,355 | 22.6 |
| 5:00 | 2 | 175 | 87.5 | 5:00 | 107 | 3,139 | 29.3 |
| 6:00 | 5 | 188 | 37.6 | 6:00 | 63 | 1,473 | 23.4 |
| 7:00 | 14 | 895 | 64.0 | 7:00 | 84 | 1,880 | 22.4 |
| 8:00 | 25 | 1,361 | 54.4 | 8:00 | 34 | 1,423 | 42.0 |
| 9:00 | 49 | 2,156 | 44.0 | 9:00 | 12 | 228 | 19.0 |
| 10:00 | 123 | 12,926 | 105.1 | 10:00 | 7 | 55 | 7.8 |
| 11:00 | 171 | 14,025 | 82.0 | 11:00 | 8 | 221 | 27.6 |
| 12:00 | 129 | 7,533 | 58.4 | 12:00 | 112 | 5,962 | 53.2 |
| Totals | 530 | 39,627 | 74.8 | Totals | 1,751 | 65,896 | 37.6 |

than satisfied itself of this fact, and millions of dollars are invested in our State.

It is interesting to note that wherever reforestation development has been established, the communities are not so hard hit from the present depression.

Timber growing depends upon forest fire prevention. Forest fire prevention depends on an efficient forestry organization and cooperation from the public. The press and the public schools have been a great aid to the publicity and educational program.

The new system of good roads in the State has been of material aid to forestry. The roads act as barriers to fires and also aid the forestry employees in getting to fires rapidly.

### TABLE No. 7—STUDY OF FIRES BY MONTH IN YEAR
January 1–June 30, 1932

| Month | Number of Fires | Per Cent by Month | Area Burned (Acres) | Average Size of Fire (Acres) |
|---|---|---|---|---|
| January | 108 | 4.6 | 5,208 | 48.2 |
| February | 505 | 21.4 | 22,714. | 45.0 |
| March | 1,157 | 49.0 | 66,298 | 57.3 |
| April | 437 | 18.5 | 11,878 | 27.2 |
| May | 71 | 3.0 | 1,192 | 16.8 |
| June | 83 | 3.5 | 1,134 | 13.7 |
| Totals | 2,361 | 100.0 | 108,424 | 45.9 |

| | No. of Fires | Area Burned Acres |
|---|---|---|
| A. M. Fires | 530 | 39,627 |
| P. M. Fires | 1,751 | 65,896 |
| Origin Hour Not Given | 80 | 2,901 |
| Totals | 2,361 | 108,424 |

The cost of forestry in Louisiana is derived from the timber severance tax through an $80,000.00 annual appropriation, the United States Government allotted $50,400.00, and the landowners contributed $41,000.00. Not one cent of this money is obtained from direct taxation.

Continuing to prevent forest fires by all agencies will create large supplies of timber resources which in turn will create revenues from industries converting forest products into commodities that are sold throughout the Nation and abroad.

### TABLE No. 8—FOREST TYPE.
January 1–June 30, 1932

| Forest Type | Number of Fires | Per Cent by Number | Area Burned (Acres) | Per Cent by Area | Average Size of Fire (Acres) |
|---|---|---|---|---|---|
| Longleaf Pine | 859 | 36.4 | 54,158 | 50.0 | 63.0 |
| Shortleaf Pine | 875 | 37.1 | 26,398 | 24.3 | 30.1 |
| Mixed Pine | 197 | 8.3 | 14,215 | 13.2 | 72.2 |
| Mixed Pine and Hardwoods | 417 | 17.7 | 13,499 | 12.4 | 32.4 |
| Hardwoods | 13 | .5 | 154 | .1 | 11.8 |
| Totals | 2,361 | 100.0 | 108,424 | 100.0 | 45.9 |

# Federal and State Investigation of the Shrimp Progresses

Shrimp country where forest and marsh meet. Bayous like this far from the Gulf may be important nursery grounds for the Louisiana shrimp supply.

APROPOS of the announcement that the U. S. Bureau of Fisheries had undertaken an investigation of the shrimp, a wise-cracking editor remarks, "Glad to see the government take some interest in the tax payer." And well he may be pleased if he has any real gastronomic discrimination or foresight for as recently as 1929 the shrimp fishermen of the South Atlantic and Gulf Coasts removed more pounds of that delightful delicacy of the sea than there are taxpayers in these United States.

Symbolic of the diminutive and the trivial as an individual, the shrimp as a tribe are far from inconsequential, for, the three important species taken from North Carolina to Texas have yielded a catch valued to the fisherman in a raw unprocessed state at nearly four and a half million dollars. As a source of food, whether served as the famliar cocktail or as salad or in such marvelous concoctions as a la Creole or jambalaya, the shrimp rivals the sacred cod or the mackerel of the North Atlantic, is half again as productive as the tunas or all the flounders, yields twice as much as the Pacific halibut and eight times as much as the lobster. In fact, in 1929, the shrimp fishery ranked ninth in volume but fifth in value among all the fisheries of the United States. If all the little shrimp caught in that year were placed head to tail in a straight line it would take a lot of work. And a lot of work was performed in the 69 canneries of the South where 1,371,502,720 individual shrimp (or there abouts) were headed by hand and canned into 818,491 standard cases worth $4,960,542.00, according to the government's published statistics. (1930)

Although I had seen something of the shrimp industry in North Carolina, Georgia, Florida and Texas, I now feel that I have made almost personal acquaintance of a good many million individual shrimp after viewing acres of them on drying platforms and seeing tons of them unloaded at canneries during the first days of the summer fishing season in Louisiana. I have just returned from a trip through the heart of shrimp land—from New Orleans to the Gulf through Barataria Bay—for Louisiana produces 45 per cent of all the shrimp taken on the South Atlantic and Gulf coasts which in turn is 95 per cent of the production of the entire country. Aboard the research vessel *Black Mallard* engaged in cooperative investigations by the Federal Bureau of Fisheries and the Louisiana Conservation Department's Bureau of Research, I viewed for the first time the famous Barataria country, land of marvelous beauty threaded by winding bayous overhung with buttressed cypress and spreading oaks festooned with misty Spanish moss. Down Harvey canal we passed through solid meadows of bright flowered floating hyacinth through Bayou Barataria and Dupre Cutoff past the last stronghold of Louisiana's fabled pirate, Lafitte, past the solitude of the wide grass marshes—"prairie tremblante"—where muskrat and water fowl and occasional 'gators lurk, through broad Bayou St. Denis to Barataria Bay where villages devoted to shrimping bake in the sun on piles above the marsh, and finally past Livingstone Light and the historic old fort slipping to peaceful oblivion beneath the waters of Grand Pass, and thence out upon the vast rolling Gulf.

It is a romantic land rich in legend of a tumultuous past under five flags, but to my eye it was shrimp country the like of which may be found more abundantly in Louisiana than in any other state, thus accounting for that state's dominant position in the shrimp industry. Here, hidden from unsuspecting eyes, is lived out the entire cycle of the shrimp's existence, its mysterious mating, the swarming of its myriad young, its feeding, growth and migration, and finally its harvest and preparation to fulfill its glorious destiny of gracing the luncheon tables of the nation.

*By* ELMER HIGGINS

*Chief, Division of Scientific Inquiry, U. S. Bureau of Fisheries*

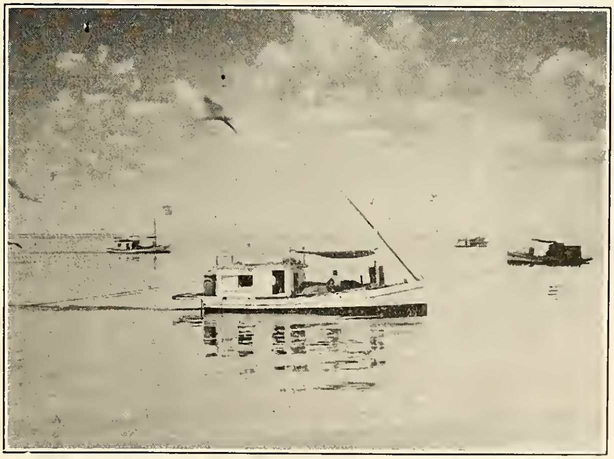
Carried on for half a century and locally appreciated, the shrimp fishery arose to the level of a great industry providing an important food commodity following the introduction of the otter trawl in 1917. In recent years production has mounted by leaps and bounds doubling itself about every eight and one-half years. Obviously such a rate of increase cannot continue indefinitely, even though markets be available, for no animal can withstand such drain upon its numbers without impairment of the supply. Nature is bounteous but not boundless. It was feared that the limit of productiveness would soon be reached and that depletion of the natural supply would result in disaster to the industry destroying the large investment of capital and depriving thousands of dependent workers of their livelihood.

As guardians of its natural resources, the state took steps to forstall calamity by regulating the fishery industry and, in order to provide wise and effective laws allowing full utilization of the natural wealth at the same time insuring perpetuation of the supply, undertook a scientific study of the natural history of the important species. Recognizing the danger of the growing industry to the shrimp supply of the entire South, the U. S. Bureau of Fisheries had already undertaken an extensive study of the shrimp throughout its commercial range and forces were joined with the state authorities in Georgia, Louisiana and Texas to make the work more effective. Dr. Frank W. Weymouth, a well known scientist of Stanford University who was already acquainted with many species of shrimp on the Pacific Coast, was placed in charge of the bureau's research staff of seven including Dr. J. S. Gutsell in North Carolina, W. W. Anderson, in Georgia, Milton J. Lindner and Gordon Gunter in Louisiana and Kenneth H. Mosher, in Texas. Louisiana's research staff under Col. Hu. B. Myers includes J. Nelson Gowanloch and Forrest Durand. The Bureau of Fisheries assigned Launch 58 for work in Georgia and the motor vessel *Black Mallard*, which has been rebuilt and admirably fitted out by the Department of Conservation of Louisiana, was detailed for research in Louisiana waters.

At the beginning of the investigation little precise information regarding the life and habits of the American species of shrimp was available. The work therefore started at scratch and even the few previous observations were repeated. My trip to Louisiana, therefore, was primarily for the purpose of reviewing the progress made in the study during two complete seasons in Georgia and one and a half seasons in Louisiana.

At the start of any investigation progress is always slow; later, accumulating records yield positive conclusions much more rapidly. I discovered, however, that truly gratifying progress had been made this early in the undertaking and perhaps most gratifying of all is the success of the State Conservation Department in securing legislation establishing an adequate system of fishery statistics.

This system of records when placed in operation will be sufficiently detailed to provide a real picture of the changing abundance of the shrimp supply, not merely the record of the amounts taken. It will thus permit the orderly expansion of the shrimp industry with full assur-



Heart of shrimp land, Barataria Bay, La. During the opening days of the fall fishing season 48 such craft were in sight at one time combing the shallow waters for the large harvest of shrimp.

ance that real depletion will promptly be discovered should it occur.

With the habitual reluctance of the scientist to disclose the results of research prematurely, Doctor Weymouth, discussed with me the voluminous data collected and analyzed by himself and his staff from which a few outstanding facts regarding the life history of the shrimp (especially the dominant species *Penaeus setiferus*) may be gleaned and tentatively stated.

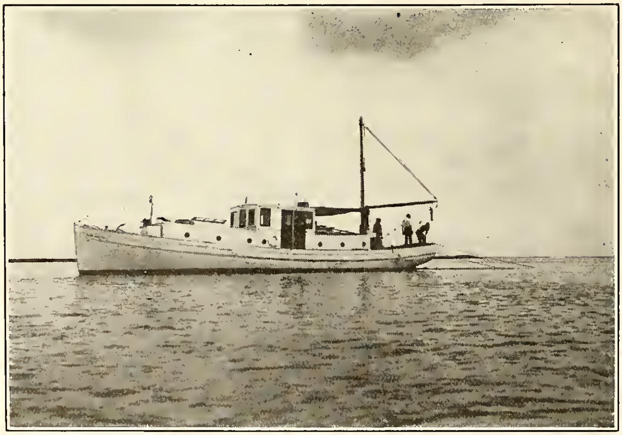
Reproduction occurs in the salt waters of the Gulf where the male shrimp attaches to the under side of the female the structure known as the spermatophore containing the male elements in reproduction. The eggs, fertilized as they are laid, are cast free into the water and there develop in about two weeks into floating larvae quite different in appearance from the parent. Spawning occurs from April to August, with its height during May to July. Apparently after spawning the female dies for no spent females are found in Louisiana.

Apparently the shrimp spawn outside in the Gulf, but the young post-larval stages ¼-inch or more in length have been found both near the sea and far up into the lakes and bayous in nearly fresh waters with a salinity of 1 or 2 parts per thousand. I saw thousands of these little creatures not yet quite like adult shrimps seined with fine collecting nets on the shore of Little Lake, thirty miles from the pass.

Growth of the young is very rapid. Shrimp 2⅓ to 3½ inches long occur in the commercial catches in July and reach a length of 5½ to 6 inches by September. These are found mainly inside the bays during the fall and winter but in the spring they tend to leave inside waters for the Gulf where the females grow more rapidly than the males, reaching an average size of 6⅓ inches and 6 inches respectively, at which sizes spawning and final disappearance ensues.

The minute shrimp mixed with the fish taken on the shores of Little Lake by the silk lined seine will provide many hours of work for Weymouth and Lindner in their study of the shrimp's development.

The annual life cycle of the shrimp is a fact of utmost importance from the standpoint of conservation, Doctor Weymouth pointed out. In the late summer and fall when the bulk of the season's catch is taken the main body of the shrimp population is comprised of immature growing individuals that were hatched in the spring. None of them have yet spawned. Hence, if the fishery becomes so intense as to seriously reduce the stock at this time there will be but few to survive the dangers of the winter to spawn in the spring. Certainly the wholesale destruction of young shrimp early in the fall before they have grown to commercial size is a useless and inexcusable waste for they grow so rapidly that a week or two delay in opening the fishing season in the bays where young



The research vessel, Black Mallard, makes an experimental haul for shrimp in Bayou St. Denis.

abound would work but little hardship. "Jumbo" shrimp are most commonly taken in March, April, May and June. Indeed the young are just being spawned and there are no other sizes available. But the fishery, which reaches a secondary peak of production at this time, draws entirely upon the spawning population just prior to shedding the eggs. If this stock is too severely reduced there will be insufficient eggs laid to replenish the species and maintain the commercial supply. Since it appears that there is no second spawning it is imperative to save an adequate spawning reserve each year to assure the following year's crop.

How this may best be done is still a matter of experiment. No method can *á priori* be prescribed with confidence; the effects of the present spring and summer closed seasons in Louisiana must carefully be observed through the medium of the detailed statistics now provided by the new law. If changed regulations are desirable the biological facts now being laboriously amassed will be a reliable guide to effective and real conservation without which State, Industry and Public must continue to muddle through depending on opinion, chance, or whimsey.

The catch of the experimental trawl would be disappointing to a commercial shrimper, but Gowanloch and Lindner find it of great interest in their study of the life and habits of the shrimp.

## PLANT DISEASE SURVEY

As an aid to better land utilization, Dr. Neil E. Stevens, in charge of the plant disease survey work of the United States Department of Agriculture, suggests a plant disease survey of the agricultural lands of the United States.

Doctor Stevens says that in some regions natural conditions favor plant diseases and that as present agricultural production is sufficient for all the country's needs, widespread knowledge of these plant disease areas could prevent attempts to grow certain crops in unsuited regions.

The plant disease survey is suggested as a supplement to the soil survey, as some areas might have productive soils but be so favorable to plant diseases as to make some crops unprofitable.

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## ESTIMATED MINERAL RESERVES OF OF LOUISIANA

(*Continued from page 4*)

tion laws to prevent waste, thus extending the life of the old fields until all gas recoverable is exhausted.

Since the discovery of gas in Louisiana, there has been actually measured by the orifice meter, approximately two thousand billion cubic feet of gas which has been used for domestic and industrial purposes. Perhaps many times this amount has been wasted.

Louisiana now ranks fourth in the list of gas producing states, with a peek production of 277 billion cubic feet in 1930. Of this amount 231 billion cubic feet was produced from the Monroe-Richland fields. It is safe to say that the gas reserves of Louisiana, both developed and undeveloped, will extend into the hundreds of thousands of billions of cubic feet, for without question this State has some wonderful undeveloped potential territory. The best authorities estimate that the Monroe field alone will produce 2198 billion cubic feet of gas with the great Richland field running a close second.

### SALT

The deposits of salt under the soil of Louisiana are not exceeded by those of any other State in the Union and the State now ranks in fifth place among the salt producing States.

Great plugs of salt one or more miles in diameter and thousands of feet in depth are located in at least 75 different parts of the State and this natural resource is inexhaustible so far as this or many succeeding generations are concerned. This State has three of the greatest salt mines in the world. The salt when mined analyses .996% pure sodium chloride. These mines have produced more than five million tons of salt, yet it is estimated that many thousand times as much remains in the ground.

### SULPHUR

Until the year 1924, Louisiana was one of the leading Sulphur producing units of the world. From a salt dome in Calcasieu Parish there has been produced almost 10,000,000 tons of sulphur. The dome from which this amount was produced is similar to the seventy or more other domes that exist today in Coastal Louisiana, and with many of these domes showing sulphur one can confidently predict that many times the above amount of sulphur will be ultimately produced.

Only one place in Louisiana is being exploited today for sulphur and that is at Lake Peigneur in Iberia Parish. A deposit has been discovered there where 25 wells have been drilled in an attempt to outline the dome. Louisiana's sulphur reserves can be conservatively estimated at seventy-five million tons or more.

### LIGNITE

According to the U. S. G. S., Louisiana has an area of 8800 square miles of lignite, varying in thickness from a few inches to 15 feet. The lignite in Louisiana is found only in the lower Tertiary deposits which crop out mainly north of a line from Natchitoches to Sabinetown and from Red River to the Sabine River. East of Red River and West of Ouachita River, on a line from Natchitoches to the upper part of Catahoula Parish, the deposits are found mostly beneath the surface.

At the present time no commercial use is being made of the lignite which Nature has so bountifully supplied to North Louisiana, but with approximately three-quarter billion of tons in reserve, Louisiana may in the future experience much development in this direction.

Summing up the above estimates, it is not unreasonable to assume the mineral resources of this State can be estimated worth from ten to fifteen billion dollars, almost enough to liquidate the national debt.

One can readily see the minerals of Louisiana are worth many times its other natural resources, and it is the duty of this administration and of those to follow, to conserve and protect this vast storehouse of wealth that future generations may not be deprived of the blessings we enjoy.

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## CAMP EQUIPMENT

To get a camp-fire permit while traveling in the national forests in many parts of the West this year the applicant must have a shovel, an ax, and a bucket as part of his outfit. There were increases in the number of fires caused by campers and smokers in many forests last year, and the United States Forest Service is taking every possible precaution and asking greater cooperation on the part of the public in order to reduce losses.

---

## SPEAKING OF TREES

The pioneer Arbor day state is Nebraska, where the observance began in 1872. Georgia was the first state to initiate forestry in vocational schools. More than 79,000,000 trees were planted in this country last year for reforestation. More oaks are planted along American streets and roadsides than any other variety.

P. S. China's great floods are due in part to the lack of forests.

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## RELATIONSHIP OF URBAN UNEMPLOYMENT TO LAND UTILIZATION AND AND SETTLEMENT

(*Continued from page 19*)

jority of the unemployed do not have sufficient capital to purchase a farm or even to operate a commercial farm on a rental basis, and the possibility of their having a return above subsistence is extremely doubtful under present economic conditions.

For those who contemplate occupancy of farms for the production of crops and livestock, either commercially or on a subsistence basis, it is generally advisable to start as a farm laborer, by securing the use of land through rental contract on an annual basis, or by a combination of the two methods, and thus give themselves time to become better acquainted with the farm or with other possible farms and with real estate values, and to determine by experience whether they will care to continue permanently in the locality, or in farming as an occupation. In the last year or two, land values have been steadily declining. Whether this decline will continue further, or has reached bottom, can not yet be determined. Before purchasing, therefore, it will usually be wise to make a careful comparison of potential receipts and expenses, in order to determine whether the probable net income will justify the purchase price. Prices of things farmers buy are still relatively high as compared with prices which they obtain for their products.

3. There is also a considerable misapprehension as to the possibility of creating new farms for commercial production.

(a) One serious type of misunderstanding is that the large area of unreserved public domain still open to homestead entry is suitable for development of arable farms. Such lands are adapted for range for cattle and sheep at the rate of from 20 to 50 acres per head of cattle, but in general contain little or no land capable of cultivation. The largest unit that can be acquired under the Homestead Acts, namely, 640 acres, is far too small to permit the making of an adequate livelihood for a family by grazing stock. Since the land is already in use by western livestock men for range purposes, to grant larger homestead units would mean displacing those already using the land. On some of the Federal reclamation projects there are still lands to be had by homesteading. In general, however, it is necessary to assume a considerable capital investment for construction charges, besides ditching and leveling the land and constructing buildings, not to speak of the capital required for the necessary livestock and equipment. For these reasons, the policy of the Bureau of Reclamation is to require at least $2,000 capital and two years' farming experience. The fact, moreover, that a good many units of this kind remain to be homesteaded means in most cases that the more desirable tracts in these reclamation projects have already been occupied.

(b) Another misapprehension is that the large areas of undeveloped land in cut-over areas or in swamp and other areas needing reclamation are capable of being developed into profitable commercial farms. In general, these are lands which have remained after the more suitable opportunities for the development of farms were selected, even when economic conditions for profitable agricultural production were much more favorable. These lands are characterized by serious disadvantages in soil and climate, as well as handicapped by low commodity prices, or must be reclaimed in order to make available for cultivation. Extensive areas that were reclaimed when prices for farm products were higher are now abandoned or have become tax delinquent or passed into foreclosure.

The idea is widely entertained that such undeveloped lands can be profitably developed and settled in compact colonies as a means of providing for the unemployed. Such programs are open to question on a number of grounds.

(1) They assume a degree of permanence in an emergency that may prove only temporary.

(2) The record of the experiments in the attempt to form these colonies in this country is not a happy one.

(3) A great deal of capital is required on the part of the colonizing agency, which implies a profitable commercial agriculture on the part of the settlers, if a return on capital advanced is to be made.

(4) A considerable period usually would elapse before such farms could be developed and put on a productive basis.

(5) The above facts would greatly restrict the number of unemployed that could be provided for with the amount of capital and administrative resources available under any given program of relief.

4. As the opportunities for the extensive settlement of the unemployed in commercial farming are not very extensive nor promising, we have concluded that in so far as they are to look to the land for relief, such relief must take the form mainly of subsistence cultivation. This implies either doing without necessities and luxuries other than food or shelter or fuel or one or more of these in combination, or obtaining

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these other advantages by part-time industrial work or other sources of income. It is safe to say that the majority of unemployed families will not find it possible to go for a long period of time on what they can produce for family consumption, without some money income. The major outlets for the unemployed principally on a subsistence basis of cutlivation are as follows:

(a) Abandoned farms, unoccupied summer shacks and summer residences that may be readily obtained either free of charge or for only a small outlay. It is probable that a systematic effort to discover such opportunities would reveal a considerable number. In most cases, however, farms have been abandoned because they are undesirable economically or socially and such usually offer little more than bare shelter and food and possibly fuel. In many cases, urban families will find it necessary to encounter hardships to which they are not accustomed.

(b) Opportunities for establishing homes near cities with the expectation of part-time or full-time employment in industry. This movement has been under way for a number of decades, and is probably a normal tendency, which is promoted by the moving of industries from large cities to smaller cities or rural areas. But this tendency does not promise immediate relief for unemployment, except for those who have some capital and who can look forward to part-time urban employment.

(c) It is frequently proposed that relief agencies acquire by purchase or otherwise suitable areas of cultivable land in the general vicinity of large cities where temporary shelters can be established either for warm-season residence or all-year residence and to which families may be moved and aided in providing their own subsistence. While this proposal does not involve an important land utilization problem, we recognize that its advantages and disadvantages as a relief measure should be carefully weighed as compared with other methods of relief. It involves a considerable outlay of capital by relief agencies to stimulate food production, which might helpfully be employed immediately, as for instance, in saving through processing and storing large quantities of food products which will otherwise be wasted; thus avoiding the glutting of the markets for perishables.

(d) Cities and industrial establishments may provide garden plots on vacant lots or accessible suburban areas where people who continue to reside in the cities may raise emergency gardens. This movement is already well under way in a good many cities, and under proper conditions appears to be a desirable type of relief project.

(e) It is possible that for a limited number of unemployed individuals or families, opportunities may be found in farm families to work on existing farms. This, however, would have to be mainly for subsistence, for the existing supply of farm labor at commercial wages is more than adequate. The placing of unemployed in such families would have to be done cautiously to avoid further dislocation of the farm labor market.

II. The Planning Committee recommends to the Advisory and Legislative Committee on Land Use as follows:

1. That the latter Committee take proper steps to give wide publicity to the above facts and principles as a means of preventing the numerous mistakes that may develop through a misapprehension of the possibilities of relieving unemployed through land settlement.

2. That steps be taken to provide adequate guidance, direction, and protection to the back-to-the-land movement, either as individuals or by organized means. It is also important, especially from the standpoint of the purposes of the two land utilization committees, that this movement not be permitted to operate to the serious disadvantage or our rural life and in such manner as to increase the existing maladjustments in the utilization of land. The unwise development of commercial productions, particularly of truck products, which have a compartively narrow market, may operate not only to injure the unemployed themselves, but also to create serious distress among the producers of farm products. It is also important to take proper steps to prevent rural communities already handicapped by financial difficulties from being unduly burdened with a large number of dependent individuals who have been encouraged to move out to the open country as a means of relieving cities from this burden.

3. As a means of furthering these ends, the Planning Committee recommends that the Advisory and Legislative Committee take steps to provide for the establishment of the necessary Federal and State machinery to give adequate direction to this back-to-the-land movement. We do not recommend a large appropriation for the purpose of financing the movement itself, but we consider it desirable to establish in each State where the problem is serious a central State committee composed of individuals representing both urban and rural interests to give proper direction to this movement. Such committees will normally consist of persons serving either ex-officio or without salary, with the necessary full-time personnel. The principal function of such State

committees would be to coordinate the efforts of existing local agencies both in city and rural territory in finding the most promising opportunities of the various types, means for the settlement of unemployed on the land, and in selecting those individuals among the unemployed best fitted to adjust themselves to these various opportunities. Such committees could also aid in discouraging ill-advised or exploitative projects.

We also recommend the provision for a limited Federal personnel to serve in stimulating the formation of these State committees and unifying and coordinating their aims. In order to simplify this Federal machinery, we recommend that a small unit be provided for in the Department of Agriculture to develop the above described program.

While the interests involved are not entirely agricultural, it appears there would be greater unity of objectives and efficiency in operation by a single department undertaking this function, with such cooperation with other departments as may appear needful.

## TREES HAVE "SYSTEM" FOR SCATTERING SEED

Trees are far from haphazard in reseeding forest land, says the Forest Service, United States Department of Agriculture. As a rule seeds liberated from a tree at the same instant are scattered in a straight line to leeward of the trees.

If all seeds produced by a tree were to be released at one time this would result in an undesirable concentration of seeds in a limited area and a total lack of seeds in other areas. Nature has guarded against any such wasteful process. A pine cone for example, opens one scale at a time. As the scale opens the two seeds which were borne under it drop out.

Ordinarily several days elapse between the escape of the first and last seeds from any one cone. Furthermore the cones on different parts of the same tree do not all open at the same time. One tree may be casting seed for several weeks. Variations in direction and velocity of the wind during this period result in widespread scattering of the seeds.

Under certain unusual conditions tree seeds may be carried for many miles. Possibly this may not occur with one seed in a million, but the fact is of great interest in explaining the occurrence of scattered specimens far from seed trees.

## FORESTRY AS A PERMANENT CURE FOR UNEMPLOYMENT

(*Continued from page 8*)

profit from their operation, the lands are not being taken care of by their present owners or the public. The British Forestry Commission is so convinced as to the importance of public forestry that it spends an average of fifty dollars an acre in buying, organizing and reforesting land for state forests. Such purchases can now be made very reasonably and would do much to help the present owners regain their feet. At the same time it would stimulate business generally.

Taking the country as a whole, there are probably more than 100,000,000 acres of such lands so situated as to make their purchase and organization under public control into public forests an excellent investment for the people of the United States. Assuming three workers for each 1,000 acres, the 100,000,000 acres would supply permanent work and residence for 300,000 men, or with their families 1,500,000 people. Here again the enterprise would go a long way toward solving our present forest and our present unemployment problem. And it would be strictly in the nature of a permanent public investment, and not charity.

## INSECTS, NOT DISEASE CAUSE PECAN BLACK PIT

Black pit, which sometimes results in heavy losses to pecan growers, is now ascribed to insect activity rather than to the effect of disease organisms, at one time considered responsible for it.

Recent investigations by entomologists of the United States Department of Agriculture indicate that some of the stink bugs and plant bugs puncture the pecans while they are in the water stage and suck the juices from the nuts. The tiny punctures cause a darkening of the interior of the nut, with little or no evidence of injury on the outside. This causes the nuts to shed before they mature.

The best way to protect pecans from black-pit injury is to select cover crops for the orchard which do not harbor the insects that cause the trouble. Cowpeas and soybeans are favorite host plants of stink bugs and plant bugs, and for this reason should not be used as cover crops. Velvet beans, the investigators learned, offer the most protection, since they attract few of these bugs. Such cultivated plants as beans, squash, and tomatoes, as well as any additional plants on which these insects are known to breed, should not be planted in or near pecan orchards.

152322

## FACTS ABOUT PERFUME YIELDING PLANTS

(*Continued from page* 10)

Honeysuckle vines produce an abundance of blossoms which are delightfully sweet and diffusive. Natural perfume products are not often met with as the odor is easily imitated by the chemist.

Many of our commonest and most cherished flowers have anisic aldehyde as the basis of their sweet perfume. To this class belong crabapple, cherry blossom, Locust, Linden, Elder, Confederate Jessamine, Nasturtium, Four o'clocks, and Oleander flowers. None of these flowers are used commercially for the extraction of natural perfume, as the chemical constituents necessary for their perfect imitation are readily obtainable and quite inexpensive.

The odor exhaled by the Red Clover blossom is of a charming honey fragrance and has led to the composition of numerous popular perfumes under the names of "Trefle" and "Orchid", "Lotus" and "Pansy."

Lavender has long been a favorite perfume in the form of "Lavender water" and "Cologne water." It is grown to a small extent in the United States and the dried flowers are used as a scent for the linen closet.

There is little likelihood of diverting this industry to this country at the present time as it is grown under naturally favorable conditions in Spain, France, Italy, and England, and the oil is distilled by the peasants under supervision of dealers to secure quality and uniformity of product.

Vetivert is a tall perennial grass grown in India and other tropical countries for the fragrant roots which produce an essential oil highly esteemed in perfume compositions. Vetivert is grown commercially to a small extent in Louisiana and sold by local druggists as a scent for linens. Yields of six hundred to one thousand pounds per acre are reported and prices are seventy-five cents to one dollar per pound in moderate quantities.

It is doubtful if the locally grown product could compete in primary markets with the tropical product either in price or quality. Incense sticks and fumigating pastiles of vetivert are very popular; they are California made.

Oak Moss, a lichen of the Parmelia family, grows abundantly on the live and water oaks of the South. It has a characteristic odor which is extracted by petroleum ether and is in great demand for the composition of heavy bouquets and perfumes. The natural products range in price from five dollars to twenty-five dollars per pound.

It may be interesting to know that this lichen formed part of the funeral equipment of the early kings and was an article of commerce in Egypt five thousand years ago. It was used as an ingredient in bread making and in the form of pulverized oak moss was used as a hair powder in colonial days, imparting both tint and odor to the coiffure of the ladies and the wigs of the gentlemen.

Peppermint and spearmint plants furnish essential oils used for flavoring chewing gum, toothpastes and mint juleps.

Mints are readily grown in Louisiana but the difficulty in keeping down the weeds in the mint fields has militated against the profitable cultivation of the crops for the manufacture of essential oil. Horsemint, Fleabane, Sassafras and Camphor are plants yielding aromatic essential oils which enter into commerce and which flourish in Louisiana and could be turned to industrial uses.

The Bayberry or Wax Myrtle, native to the South, also produces an aromatic oil and wax from the berries for candle making.

The Pines are of interest and importance in that they are the source of numerous aromatic oils which find their way into the perfume industry either in the original condition or as the basis of synthetic chemicals which have odor values.

While turpentine as such is not of any use in perfumery, the alcohol "Terpineol" and its esters, prepared from it are of the greatest importance. Terpineol is the basic odor of lilac lily, narcissus and many other plant perfumes, and is one of the triumphs of the chemist in the industry for its fragrance and cheapness.

Various pine needle oils are employed as aromatic sprays for theatres and hospitals.

Cypress tree branches yield a fragrant oil which contains "Cypress camphor" as a constituent and used as a fixative in various scents.

There is no doubt that soil and climatic requirements are favorable for the production of practically all of the perfume yielding plants of temperate or semitropical countries in many parts of the South.

Already an interest has been aroused in the direction of volatile oil production and the trade may be relied upon to take an active part in any rational attempts at developing such an industry with the usual innovation of new methods and economics so characteristic of American ingenuity and enterprise.

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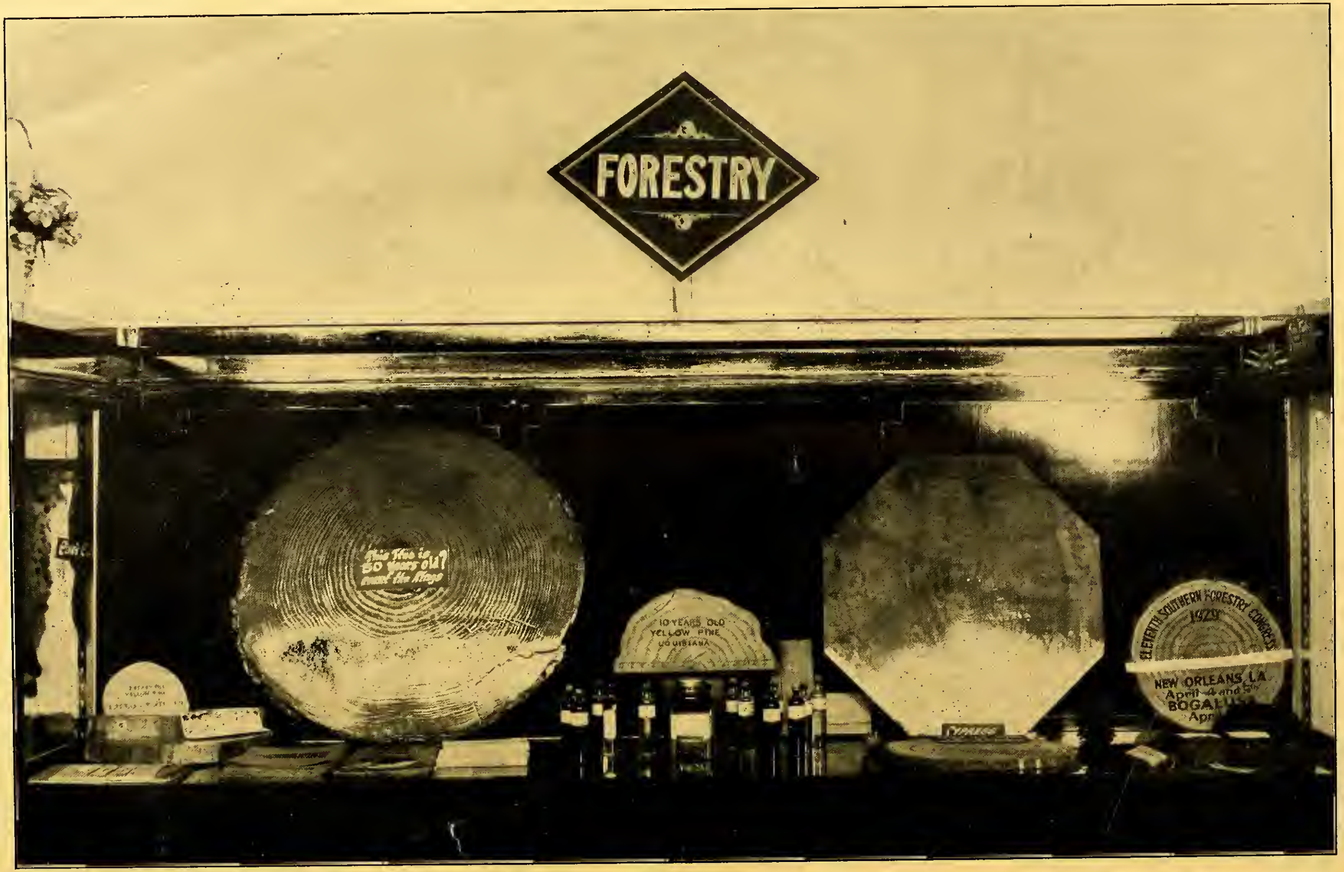
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